THE IRON TRADE REVIEW

Vol. LXVII Cleveland, July 29, 1920 *No. 5*

Traffic Situation Is Unchanged

Although Shipments Move Easier in Chicago District, Most Steelmakers Still Seek Relief from Rail Troubles—Germany Inquires for Plates—Fuel Market Is Strong—Bessemer $47 Valley

CONTINUED restrictions to the movement of fuel, iron and steel in certain districts and improvements in the volume of shipments in other localities, particularly Chicago, make it impossible to generalize the transportation situation which still is the governing factor in iron and steel operation. Prospects for an increase in the supply of open top cars for iron and steel grow poorer daily and the present stringency is likely to continue until the close of the lake shipping season. Traffic officials of valley and other interests will go to Washington this week to ask that all open top cars with sides up to 40 inches, instead of 36 inches as provided by order No. 9, be made available for iron and steel shipments.

Attorney General Palmer announces that prices of coal will be scrutinized for evidence of profiteering. Steelmakers are watching with calm interest the development of a new schedule of freight rates. The imminence of a 30 to 40 per cent increase is foreshadowed in the industry only by a noticeable hesitation in placing future business until definite figures on shipping costs are known.

Germany Wants Plates

Following the action of a Pittsburgh independent, a valley interest has advanced wire products $5 per ton except galvanized staples. The leading producer of wire products in the Pittsburgh district is operating at better than 75 per cent capacity. Sheets are scarce in all markets and three plants are on the verge of a shutdown on account of lack of closed cars. An export house reports that Germany is in the American market for 40,000 tons of ship plates. Independents are quoting plates at 3.50c for domestic consumption and 3.50c to 3.75c for export. About 2000 tons of standard open-hearth rails were sold at $65, mill. The Pennsylvania railroad is inquiring for from 500 to 750 hopper cars and other inquiries aggregate about 850 cars and 10 locomotives. Orders for 800 stock cars were closed during the week. Structural shapes are in little demand owing to general building inactivity. The prices of iron bars in the eastern market have stiffened, quotations now ranging from 4.50c to 5.00c. The leading interest in western Pennsylvania is producing ingots at 75 per cent capacity. A large independent in Pennsylvania is quoting prices on finished products on a f.o.b. mill basis on western business, and on the Pittsburgh basis on eastern business, thus getting the benefit of the freight differential from Pittsburgh to the mills making shipments.

Coke Tends Upward

Shortage of coke at furnaces, a situation further complicated by transportation difficulties, is contributing to a strong market. Although quotations for spot fuel range from $18 to $19, Connellsville ovens, scattered sales are reported at Buffalo, Boston and Cincinnati at $20, ovens, or more. In striking contrast are reported deliveries of coke on old contracts at as low as $7.50. The price of by-product coke has advanced at several points, due to the fact that the lake coal car priority ruling is restricting the volume of coal going to by-product ovens.

1921 Iron Is Slow

The buying movement for iron requirements for 1921 has only barely started, both furnacemen and consumers hesitating to talk first quarter business except in a few instances. Uncertainty as to future freight rates and the price of coke is the principal cause of this attitude. Operating conditions in the eastern blast furnace district are improving, a slight gain in tonnage being reported. In the Pittsburgh district two furnaces were lighted in the week while another Pittsburgh stack and two Buffalo stacks were forced to bank owing to lack of fuel. Further strength in the market for bessemer iron developed at Pittsburgh where 1000 tons were sold at $47, valley furnace, delivery at the convenience of the producer. This figure represents the market, although smaller sales are being made at $46. Approximately 1000 tons of foundry iron, some of it up to 3 per cent in silicon was sold in Pittsburgh at $46, valley furnace. A Virginia furnace has increased its price on foundry iron to $47, base furnace, for first half delivery. Slow deliveries of coal and coke have caused certain furnace interests to revise their requirements of iron ore, estimated needs being reduced 20 per cent in some cases.

THE IRON TRADE REVIEW

Devoted to the Iron, Steel, Foundry and Metalworking Industries
Published Every Thursday by
THE PENTON PUBLISHING CO., CLEVELAND
Member, Audit Bureau of Circulation and Associated Business Papers, Inc.

BRANCH OFFICES

CHICAGO - - - - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - - - 501-505 Commercial Tribune Bldg.
NEW YORK - - - - - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - - - - 426 Old South Bldg.
PITTSBURGH - - - - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - - - 40 Metzerott Bldg
BIRMINGHAM, ENG. - - - - - - Prince's Chambers
LONDON, ENG. 2-4 Caxton House, Westminster, S. W. 1.

Cable Address, IROTRAPEN, London

Subscription, United States, Cuba and Mexico, $5 per year. Canada $7.50 and other Foreign Countries, $10 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

Copyright 1920 by the Penton Publishing Co.

IN THIS ISSUE

	PAGE
Iron and Steel Market Review	277
Editorials	278, 279
Iron, Steel and Scrap Prices	280
Index to Market Reports	280
Iron and Steel Markets	281 to 291
Decision Upholds Basing Point	291
Foreign Markets	293 to 295
British Billets Selling Lower	293
Britain Unable To Fill Foreign Demands	293
Steel Trade in Suspense; Buyers Holding Off	294
Strike Report Favors Workers	296
Builds Forge Shop in Pittsburgh	298
New Era Dawns in Ore Industry	301
Fabricating Steel Foundry Flasks	305
Labor Turnover Least in 1915	309
Applying Oxygen in Metallurgy	312
Using Oxygenated Air in Ironmaking	314
Belgian Industry is Rapidly Reviving	316
News of Societies	317
Business Studies Rail Situation	318
Labor Efficiency is Increasing	320
New Rate Plea Delays Decision	324
Railroad's Request for 20 Per Cent Increase in Passenger Rates to Help Meet Wage Raise Now Considered, but Freight Advance is Likely to be From 30 to 35 Per Cent—Commission to Investigate Bankers' Interest Charges	
Commission Delays Action Till October	324
President Scrutinizing Coal Situation	325
Machine Tool Market is Inactive	330
Eastern Machinery Market Continues Sluggish	330

Basing Point Plan Is Lawful

AFTER nine months of deliberation the federal trade commission has dismissed the complaint of the western rolled steel consumers and others who sought to have the Pittsburgh basing point abolished. Although the vote of the five commissioners who heard the testimony was close, being only 3 to 2 in favor of upholding the present basing point, the two dissenting commissioners base their vote largely on the ground that insufficient evidence had not been presented, rather than that the present method of determining the prices is discriminatory and in violation of the Clayton anti-trust act.

Viewed in this light, those who have favored the Pittsburgh base point plan may well regard the decision as more impressive than is indicated by the close vote. However, there is little, if anything, in the decision to indicate that the matter has been settled for any extended period. On the other hand, the minority report may be interpreted to hold forth much hope for the complainants. This is expressed by Commissioner Pollard as follows:

"In view of the importance in newness of the action involved and the vast interests which will be affected and in view of the diversity of opinion among members of the commission, I am unwilling to close the door to further consideration of this application."

Commissioner Thompson, who also dissented from the majority report explained his action on the ground that many additional facts are needed "before the commission can properly determine whether to dismiss a matter of so great interest to the public and before it can give forth an authoritative statement as to why it dismisses the application."

The briefs included in the majority report indicate that the three commissioners recognize the difficulty of unifying a vast area into a single market which seeks a common price.

Commissioner Murdock points out that Pittsburgh is the point of heaviest surplus production of steel in the United States and that this point, under the operation of the law of supply and demand, must necessarily strongly influence the price in other markets with excess demand. Commissioner Gaskill states that the commission has no power to rule upon the soundness of the economic principle involved.

It is significant that the commission has handed down an unusually frank decision in which its action has been carefully explained and in which the reasoning by which a decision was reached is fully revealed in the briefs. However, the casual reader cannot help but wonder how much influence recent happenings in the iron and steel industry have had upon the decision. It is interesting to contemplate what would have happened had the United States Steel Corp. not been upheld in its recent suit.

In dismissing the complaint, the commission takes the course which means the least shock to the industry. That the decision will be received more favorably in all circles than a reverse decision possibly could have been, is due to the fact that the minority report implies that the matter should receive further and far reaching investigation.

Another Report on the Strike

SO MUCH has been said about the improved status of the workmen of this country, and especially those imployed in the steel industry, that the allegations and findings of the Interchurch World Movement's commission of inquiry on the steel strike, as published elsewhere in this issue, direct attention more to the state of mind in which the clergymen approached and executed their self-appointed task, than to the iniquities and injustices which they claim are being worked by the steel companies, and particularly the Steel corporation, upon their employes.

All through the report there is apparent a spirit which possibly may be traced to the time, last fall, when Judge Gary refused the offer of the Interchurch World commission to mediate in the steel

strike, when he found that this offer was made at the instance of Foster and Fitzpatrick. The Interchurch World investigators are firmly of the opinion that Judge Gary should have recognized Foster and Fitzpatrick as the representatives of the strikers, whereas Mr. Gary has made plain time and again that he could regard these men only as outsiders.

The minimum of subsistence and minimum of comfort figures which the commission uses in its attempt to prove that common labor employed by the corporation was not remunerated sufficiently to enable it to subsist during 1918 and 1919, are interesting from an academic standpoint. Anyone who spent any considerable amount of time in the steel centers during those years realizes, despite these theoretical levels, the tremendous buying power of these employes of the steel companies. They not only are able, but, during the past few years have been increasingly able, to provide themselves with pleasure and recreation in addition to paying their subsistence, sending money abroad.

With respect to the 12-hour day, the commission declares there is no dispute with Judge Gary's contention that the men themselves oppose a reduction in hours because that would mean also a reduction in their pay. The commission proposes that the remedy would be the adoption of a minimum rate of pay for eight hours that would constitute a fair living wage. That, however, would not eliminate the desire to earn more money by working longer hours. Some day the 12-hour day will be eliminated. It cannot be during such a period of labor shortage, however, as has been with us during the past four years and continues to prevail.

A significant feature of the Interchurch World Movement report is the statement that the findings are based on the statements, supported by affidavits, of some 500 steel plant workers. This number constitutes a ridiculously small percentage of the total number of men employed by the Steel corporation alone. In every industry there are discontented workers. Among farm-hands, barbers and even among clergymen, there can be found those who are dissatisfied with the conditions under which they labor, with their remuneration, etc. If the allegations and findings of the Interchurch World Movement were based upon actual facts, the steel strike should have been participated in generally by the steel workers instead of being restricted, practically, to the foreign element.

Irrespective of what the Interchurch World Movement reports, the steelmakers always will have the satisfaction derived from the knowledge that when the germ of sovietism was sweeping over the country like an epidemic, and finding a lodgement especially in the big foreign-speaking industrial populations, and innoculating many Americans as well, they stood firm and helped to prevent what, had the steel strike been won, might have assumed the proportions of a national catastrophe.

A Pointer for Minnesota

EVERY proponent of excessive taxation for the mines of Minnesota should read "The Future of the Lake Superior District as an Iron Ore Producer," by Edward W. Davis, issued by the University of Minnesota's school of mines experimental station. From present indications the tonnage tax proposal, so frequently considered by the legislature and just as often defeated, will be made one of the chief political issues in the state and brought forward again at the approaching session of the law-making body. The mine operators have been requested by the state tax commission to provide it with data relating to production costs to be used as a basis in the proposed revaluation of mines, and also "for the benefit of the legislature in case the information is needed in the consideration of the tonnage tax." This request is somewhat along the line of that made of the iron and steel industry by the federal trade commission, but it is being complied with by the ore producers, who, as a matter of fact, have submitted such data in the past when the tonnage tax question was considered, although not over the individual signatures of the persons supplying them.

In his treatise on the ore situation, Mr. Davis points out the difficulties already confronting the producers, and from a careful reading, it is clear that those difficulties will not be lightened by the proposed tonnage tax. One of the most significant points made is that the state has much to lose and nothing to gain by discouraging initiative in the production of ore.

As Mr. Davis points out, a new era is dawning in mining in the Lake Superior district. Owners of mines which are nearing depletion are looking about for other sources of supply; capital is not so ready as in the past for investment in the Lake Superior district. The competitive possibilities of other fields are becoming more impressive. Surely, if the tonnage tax was unfair when the Lake Superior district was in its prime, it would prove doubly oppressive at this time.

Mining operations are undergoing a transition; the prosperity of the industry of the future depends on how successfully producers will be in making merchantable the almost inexhaustible supply of low-grade ores. As Mr. Davis says:

"The state of Minnesota need have no fear of an iron-ore shortage or a barren waste of abandoned mining lands. The iron-ore industry will be thriving in this district as long as iron and steel are useful metals, provided careful and exhaustive study of the treatment of low-grade material continues and all possible encouragement is given to this important industry by state and federal authorities."

That is the unbiased opinion of an expert on the iron ore question, published by the state's institute of learning. Will the state act on its own best judgment?

Iron and Steel Prices

CORRECTED TO WEDNESDAY NOON—SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 338 AND 342

Pig Iron

Bessemer, valley	$47.00
Bessemer, Pittsburgh	48.40
Basic, valley	46.00
Basic, Buffalo	45.00
Basic, Pittsburgh	47.40
Basic, delivered, eastern Pa.	44.50 to 45.50
Malleable, valley	45.00
Malleable, Pittsburgh	46.40
Malleable, Chicago, furnace	46.50
Malleable, Buffalo, furnace	46.25
Malleable, delivered eastern Pa.	48.50 to 50.00

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$50.90 to 53.10
No. 1X, Buffalo	48.00
No. 1 foundry, Chicago furnace	48.25
No. 2 foundry, valley	46.00
No. 2 foundry, Pittsburgh	47.40
No. 2 foundry, Buffalo	45.00
No. 2 foundry, Buffalo, Boston del.	48.90 to 49.90
No. 2 foundry, Chicago furnace	46.00
No. 2 foundry, Ironton furnace	45.00 to 46.00
No. 2 foundry, Cleveland furnace	45.00
No. 2X, eastern, del., Phila.	49.10 to 51.10
No. 2X, eastern, N. J., tidewater	49.10 to 51.10
No. 2X, Pennsylvania, Boston del.	48.90 to 51.15
No. 2 foundry, Pa., Boston del.	47.90 to 49.90
No. 2X, foundry, Buffalo furnace	46.25
No. 2X, Buffalo, Boston del.	50.15 to 51.15
No. 2 foundry, del., Phila.	48.10 to 49.10
No. 2 foundry, N. J., tidewater	48.10 to 49.10
No. 2 southern, Birmingham	42.00 to 45.00
No. 2 southern, Cincinnati	45.60 to 48.60
No. 2 southern, Chicago	47.00 to 48.00
No. 2 southern, Phila.	47.50 to 48.00
No. 2 southern, Cleveland	47.00 to 47.50
No. 2 southern, Boston	50.00
No. 2 southern, St. Louis	46.30 to 48.30
No. 2X, Virginia, furnace	47.25 to 48.25
No. 2X, Virginia, Philadelphia	51.35 to 52.35
No. 2X, Virginia, Jersey City	51.65 to 52.65
No. 2X, Virginia, Boston	52.95
Gray forge valley, Pittsburgh	45.40
Gray forge, eastern Pa.	45.60 to 47.10
Yow phosphorus, standard, valley	55.00
Low phosphorus, standard, Phila.	57.80
Low phosphorus, Lebanon, furnace	50.00 to 53.00
Charcoal, Superior, base, Chicago	57.50

Silvery Iron

8 per cent base at furnace

Jackson County, Ohio	$58.00
Tennessee, Chicago delivery	58.40
Ohio brands, Chicago	61.80

Bessemer Ferrosilicon

Jackson County, Ohio, furnace

10 per cent	$67.50
11 per cent	70.80
12 per cent	74.10

Coke

Connellsville furnace	$18.00 to 19.00
Connellsville foundry	18.50 to 19.50
Pocahontas furnace	20.00 to 21.00
Pocahontas foundry	20.00 to 21.00
New River furnace	20.50 to 21.00
New River foundry	21.00 to 21.50
Wise county foundry	21.00
Wise county furnace	20.00 to 21.00

Ferroalloys

Ferromanganese, 80 per cent, delivered, domestic metal	$190.00 to 225.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports	185.00 to 195.00
Spiegel, 18 to 22 per cent furnace spot	75.00
Ferrosilicon, 50 per cent, spot and contract, delivered	0.80 to 0.85
Ferrotungsten, standard, per pound contained, furnace	1.10 to 1.15
Ferrochrome, 60 to 70 per cent chromium, 6 to 8 per cent carbon, per pound contained, maker's plant	0.19 to 0.21
Ferrovanadium, 30 to 40 per cent per pound contained, according to analysis	6.50 to 9.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$65.00
Open-hearth, Youngstown	65.00
Open-hearth, Philadelphia	59.10 to 69.10
Bessemer, Pittsburgh	65.00
Bessemer, Youngstown	65.00
Forging, Pittsburgh	80.00 to 90.00
Forging, Philadelphia	79.10

SHEET BARS

Open-hearth, Pittsburgh	$75.00
Open-hearth, Youngstown	75.00
Bessemer, Pittsburgh	70.00
Bessemer, Youngstown	70.00

SLABS

Pittsburgh and Youngstown	65.00 to 70.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$70.00 to 80.00
Grooved skelp, Pittsburgh	3.45c to 4.00c
Sheared skelp, Pittsburgh	3.45c to 4.00c

Shapes, Plates and Bars

Structural shapes, Pittsburgh	2.45c to 3.50c
Structural shapes, Philadelphia	2.70c to 3.75c
Structural shapes, New York	2.72c to 3.77c
Structural shapes, Chicago	2.72c to 3.52c
Tank plates, Pittsburgh	2.65c to 3.50c
Tank plates, Chicago	2.92c to 3.77c
Tank plates, Philadelphia	2.90c to 3.75c
Tank plates, New York	2.92c to 3.77c
Bars, soft steel, Pittsburgh	2.35c to 4.00c
Bars, soft steel, Chicago	2.62c to 3.52c
Bars, soft steel, New York	2.62c to 4.27c
Bars, soft steel, Philadelphia	2.60c to 4.25c
Bar iron, common, Phila.	4.75c to 5.25c
Bar iron, common, Chicago	3.75c to 4.50c
Bar iron, common, Cleveland	3.75c
Bar iron, common, New York	4.77c to 5.27c
Bar iron, common, Pittsburgh	4.00c to 4.50c
Hard steel bars, Chicago	3.75c to 4.00c

Rails, Track Material

Standard bessemer rails, mill	$45.00 to 60.00
Standard open-hearth rails, mill	47.00 to 62.00
Relaying rails, light, St. Louis	52.00 to 55.00
Relaying rails, Pittsburgh	50.00 to 55.00
Angle bars, Pittsburgh base	3.00c to 4.00c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	2.45c to 3.75c
Spikes, railroad, Pittsburgh	4.00c to 4.25c
Track bolts, Pittsburgh	6.00c to 6.50c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	3.00c to 3.50c

Wire Products

(100 lbs. to jobbers, carloads; retailers, 5c more)

Wire nails, Pittsburgh	$3.25 to 4.50
Plain wire, Pittsburgh	3.00 to 4.00
Galvanized wire, Pittsburgh	3.70 to 4.70
Barbed wire, painted, Pittsburgh	3.40 to 4.15
Barbed wire, galvanized, Pittsburgh	4.10 to 5.10
Polished staples, Pittsburgh	3.40 to 4.15
Galvanized staples, Pittsburgh	4.10 to 5.10
Cut nails, Pittsburgh, l. c. l.	6.195
Coated nails per count keg, Pitts.	2.85 to 4.10c

Chain, Piling, Strip Steel

Chain, 1 in. proof coil, Pitts.	6.75c
Sheet piling, base, Pittsburgh	2.55c to 3.65c

Cold rolled strip steel, hard coils, 1¼ inches and wider by 0.100 inch and heavier, base per 100 pounds, 8.50c to 10.00c.

Sheets

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c to 7.50c
No. 28, bessemer, Pitts.	4.35c to 7.50c
No. 28, open-hearth, Chi.	4.62c to 8.27c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c to 9.00c
No. 28, bessemer, Pitts.	4.35c to 9.00c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c to 8.50c
No. 28, bessemer, Pitts.	5.70c to 8.50c
No. 28, open-hearth, Chi.	5.97c to 8.92c
No. 28, open-hearth, Philadelphia	10.00c to 10.50c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c to 7.00c
No. 10, bessemer, Pitts.	3.55c to 7.00c
No. 10, open-hearth, Chi.	3.82c to 6.77c
No. 10, open-hearth, Phila.	3.80c to 7.25c

Full sheet schedule page 342

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00 to $8.50

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers Carloads	Black	Galv.
¼ to 3 in., butt steel	54 to 57½	40½ to 44
¾ to 1½ in., butt, iron	24½ to 34½	8½ to 18½

Full pipe schedule page 342

Boiler Tubes

Steel, 3½ to 4½ inches, c. l.	30½ to 40½
Iron, 3½ to 4½ inches, c. l.	11

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B

Four-inch, Chicago	79.80
Six-inch and over, Chicago	76.80
Four-inch, New York	79.30 to 80.20
Six-inch and over, New York	76.30 to 77.20
Four-inch, Birmingham	73.00
Six-inch and over, Birmingham	70.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c to 5.50c
Bands, Pittsburgh	3.05c to 5.50c
Hot rolled strip steel, Pitts. stamping quality	5.50c to 7.00c
Cold finished steel bars, Pitts., base	4.10c to 6.50c

Cotton ties, 3000 bundles and over, $2.01½ per bundle mill, July basis, with 1½c per bundle per month carrying charge.

Rivets

Structural rivets, Pittsburgh	4.50c
Boiler rivets, Pittsburgh	4.60c
Rivets ⅞ in. and smaller, Pitts.	40-50 off

Nuts and Bolts

(Prices f.o.b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	30-10 off
Cut thread	30 off
Larger and longer	25 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	40–5 off
Cut thread	30–10 off
Larger and longer	30 off
Plow bolts Nos. 1, 2 and 3 heads	35 off
Other style heads	20% higher
Stove bolts in packages	60–10 off
Stove bolts in bulk	60–10–2½ off
Cold pressed semifinished hexagon nuts ½ in. and larger	50–10 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	50–10 off
Gimlet and cone point lag screws	40–5 off

NUTS

(Up to 1¼ and 1½ inches inclusive)

Hot pressed, square blank	$1.50 off
Hot pressed, square tapped	1.00 off
Hot pressed, hexagon blank	1.50 off
Hot pressed, hexagon tapped	1.00 off
Cold pressed, square tapped	1.00 off
Cold pressed, square blank	1.50 off
Cold pressed, hexagon blank	1.50 off
Cold pressed, hexagon tapped	1.00 off

Market Report Index

Weekly Market Review	277
Pig Iron	281
Coke	283
Bars	284
Nuts, Bolts, and Rivets	284
Ferroalloys	284
Cars, and Track Materials	284
Plates	285
Tin Plate	285
Scrap	286
Ore	287
Sheets	287
Wire	287
Structural Shapes	288
Warehouse	288
Merchant and Cast Pipe	288
Semifinished Steel	289
Nonferrous Markets	289
Export Market	290
British Market	293
Coke By-Products	326
Machine Tools	330

Prices Present and Past

Yesterday, a month ago, three months ago and a year ago

Prices are those ruling on the largest percentage of sales, at the dates named

	Prices July 28, 1920	Average prices June 1920	Mar. 1920	July 1919
Bessemer, valley, del., Pittsburgh	$ 48.40	$44.25	$43.40	$29.35
Basic, valley, delivered, Pittsburgh	47.40	45.15	44.40	27.15
*No. 2 Foundry, val. del. Pittsburgh	47.40	45.40	43.40	28.15
*No. 2 Foundry, Chicago, furnace	46.00	43.00	43.00	26.75
Lake Superior charcoal, Chicago	57.50	57.50	57.50	31.75
Malleable, valley	45.00	43.50	43.75	28.65
Malleable, Chicago	46.50	43.50	43.50	27.25
*Southern, No. 2, Birmingham	42.00	42.30	40.00	25.00
*Southern Ohio, No. 2, Ironton	45.00	44.00	43.25	26.75
Basic, eastern del., eastern Pa.	44.50	44.05	43.00	26.50
**No. 2X, Virginia, furnace	47.00	46.25	43.25	26.50
**No. 2X, eastern del., Philadelphia	49.10	46.90	45.70	29.50
Gray forge, valley del., Pittsburgh	45.40	42.90	42.40	27.15
Ferromanganese, 80 per cent, delivered	200.00	200.00	168.00	112.00
Sheet bars, bessemer, Pittsburgh	70.00	70.00	70.00	40.80
Sheet bars, open-hearth, Pittsburgh	75.00	75.00	74.50	40.80
Billets, bessemer, Pittsburgh	65.00	66.25	65.00	37.30
Billets, open-hearth, Pittsburgh	65.00	66.25	67.00	37.30
Steel bars, Pittsburgh	3.25c	3.25	3.875	2.35
Steel bars, Chicago	3.52	3.52	3.03	2.62
Iron bars, Philadelphia	4.25	4.25	4.20	2.595

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

	Prices July 28, 1920	Average prices June 1920	Mar. 1920	July 1919
Iron bars, Cleveland	$4.00	3.85	3.75	2.52
Iron bars, Chicago mill	3.75	3.75	3.50	2.62
Beams, Chicago	3.52	3.67	3.16	2.72
Beams, Pittsburgh	3.25	3.25	3.25	2.45
Beams, Philadelphia	3.50	3.65	4.00	2.695
Tank plates, Pittsburgh	3.50	3.50	3.75	2.65
Tank plates, Chicago	3.77	3.93	3.38	2.92
Tank plates, Philadelphia	3.75	3.90	4.25	2.895
Sheets, blk., No. 28, Pittsburgh	7.00	7.00	6.00	4.31
Sheets, blue anld., No. 10, Pittsburgh	5.00	5.00	5.50	3.51
Sheets, galv., No. 28, Pittsburgh	7.50	7.50	7.25	5.66
Wire nails, Pittsburgh	4.00	4.00	4.00	3.25
Connellsville furnace coke	18.00	14.50	6.00	4.00
Connellsville foundry coke	18.50	15.00	7.00	4.90
Heavy melting steel, Pittsburgh	26.00	25.30	23.00	19.90
Heavy melting steel, eastern, Pa.	22.00	22.40	25.00	18.85
Heavy melting steel, Chicago	24.50	22.40	24.20	19.40
No. 1 wrought, eastern Pennsylvania	33.50	33.50	36.50	24.70
No. 1 wrought, Chicago	28.50	28.00	30.00	21.20
Rerolling rails, Chicago	36.50	32.35	32.60	24.70

Volume of Iron Sales Unabated

Higher Prices Appear in Several Markets and Sales Up To 1000 Tons Are Reported—Most Business Is for Last Half but 1921 Iron Is Booked—Bessemer $47 Valley

Philadelphia, July 27.—Despite the scarcity of pig iron, good business was done during the past week in this district, especially for nearby shipment. Considerable fourth quarter and some first half business has been booked by some eastern Pennsylvania furnaces. No. 2X has been sold for first half delivery at $48 furnace and some Virginia iron for first half was taken on a basis of $47 furnace. Considerable new inquiry for foundry use and difficulty in getting iron is causing sellers to scour the market for tonnage, with the result much reselling is being done. A round tonnage of gray forge sold at $46, eastern Pennsylvania furnace, but this grade can be had at $44.50 furnace. Some malleable sold for $48.50. Basic tonnage is wanted but none is obtainable. Some of current reselling of foundry iron is being done on a basis of $46 and $47, furnace for No. 2 plain. Steel and pig iron makers greatly are concerned over the new ruling of the interstate commerce commission defining coal cars and prohibiting the use of any open top cars with sides higher than 36 inches for anything excepting coal. This will further restrict scrap iron and steel shipments. Moreover, a tendency toward favoring shipments of fuel to northeastern and northwestern points is seriously reducing the number of cars available for fuel for eastern furnaces. In some circles, it is thought that the present situation cannot be satisfactorily relieved until the lake season closes, while others who take a more pessimistic view, state that it is a matter of years before continuous and wholly adequate car service may be expected. They point out that the railroad trouble is due not only to lack of cars, but also to a greater extent to a shortage in the number of locomotives. The railroad situation, combined with the high price of coke is causing backwardness in placing 1921 business. Some West Virginia spot furnace coke sold at $17, ovens, while $18 and $19, Connellsville, now are the prevailing asking prices of fuel. Coal men met with Attorney General Palmer at a meeting in New York and it was intimated that prices of fuel will be closely scrutinized for evidence of profiteering.

Better Inquiry; Higher Prices

Chicago, July 27.—Activity in inquiry exceeds expectations of sellers of pig iron, melters asking for tonnages ranging from 500 to 1000 tons to lots of 3000 tons in various grades. Much of this is for last half delivery and there also is some inquiry for first half of 1921. In fact southern iron has been sold for deliveries covering first quarter and first half. Some of present activity in malleable iron is due to inability of a Milwaukee stack to obtain coke and go into blast, tonnages contracted with this interest for midyear delivery being missing. To cover this lack of malleable users are seeking tonnages from other makers for current and future melt. An Indiana melter recently covered 5000 tons with a Chicago producer, foundry iron for last half. Prices are strong and rising in many producing centers. Nothing less than $46, Chicago furnace, can be done at present for prompt or last half iron. No announcement has been made as to prices for first half as inquiry for that delivery has not been received in sufficient volume to be important. Somewhat better supply of cars is being received, aiding shipments in many directions and enabling furnaces to pick up some iron in storage yards. However, the car supply is irregular and some days is below needs of shippers. Among present inquiry are noted tonnages of 1000 tons, 550 tons and 500 tons of malleable, two of 500 tons each of low phosphorus and 750 tons of foundry iron with silicon over 2.25. Low phosphorus iron is quoted at an advance of $2 per ton by Ohio makers, now being $57, Ohio furnace, with freight $4.38 to Chicago. Inability of the western producer to get into blast is reflected by increased demand for this grade in this territory. A southern interest recently closed with a Chicago melter for 8000 tons of foundry iron for delivery from August to June, at $42, Birmingham and with another melter for 1500 tons of foundry iron for last and first quarters at the same figure. A total of about 6500 tons in small lots, all under 1000 tons, has been placed at the same figure with the same maker, in addition to the two mentioned. Silveries are more active, inquiry being made in lots of 100 and 200 tons. A Tennessee maker continues to quote $55, furnace, for 8 per cent, while Jackson county makers are higher at $57.50, furnace, for the same grade, freight to Chicago being about equal. At these figures this is the cheapest form in which silicon can be bought.

1921 Buying Is Quiet

Boston, July 26.—While the majority of furnace interests supplying New England are now willing to accept some business for delivery beyond Jan. 1, consumers in general are decidedly reluctant to contract for 1921 iron. Because of the acute transportation situation they believe it is better to specify last quarter delivery. For supplies for

use beyond the first quarter most foundries are willing to wait for possible reduction in prices. The Virginia Iron, Coal & Coke Co., Roanoke, Va., which came into the market two weeks ago on a basis of $46 for 1921 iron, has just advanced its price to $47, base. Reports from central and western Pennsylvania are to the effect that concessions in several cases are being made for first quarter iron. One lot of 400 tons of Everett iron was sold to a New Hampshire consumer for 1921 delivery at a price below $45 for the base grade. The freight rate from this interest is $4.70. Other sales have been of small lots. Prompt and last half iron has been moving at a better rate than earlier in the month. One central Massachusetts textile machine manufacturer bought several thousand tons of different irons for prompt delivery. A substantial portion of the total purchase was for southern iron. A western Connecticut interest also bought rather heavily for prompt shipment. Shipments of pig iron have been coming through in decidedly favorable manner during the last 10 days and foundries in most cases are out of immediate danger of closing down. Embargoes, however, were placed recently on nearly all New England roads so that permits are again required for pig iron shipments. A Buffalo furnace with resale iron to offer at $45, base, has been making some substantial sales, and several of these to Massachusetts consumers have totaled approximately 1500 tons. The sentiment generally indicates a stronger market. Dealers are of the opinion that a more or less pronounced buying movement has just started and that sales during the first half of August will bring in nearly all of the remaining last half business as well as considerabe tonnage for 1921.

Production Somewhat Better

New York, July 26.—Operating conditions in the eastern blast furnace district are somewhat better. So far the improvement has been reflected to the extent that in some cases where furnaces were operating at reduced rate because of coke shortage, they now are turning out slightly more tonnage, and in other cases where furnaces were forced by fuel shortage to confine production to low silicon iron they now are turning out higher silicon. Up to the present the improvement is just perceptible, but hopes for a greater improvement during the next week or two are held out by indications that coke shipments will be somewhat larger. In the Broad Top district in Pennsylvania conditions continue bad. The coal miners' strike in that district continues, and as a result furnaces there which always produce their own coke now are going outside for their fuel. It is expected that the large new furnace of the Empire Steel & Iron Co., at Catasauqua, Pa., will go in blast next month. The Goshen, Va., furnace will go in blast as soon as a supply of coke is assured. The large new furnace of the Thomas Iron Co., at Hokendauqua, Pa., now is not expected to go in blast until December. Warwick furnace, which now is on basic is expected to be switched to foundry soon. It is not yet certain when the second Warwick furnace will become active. While the present market is not an active one, sales in this district during the past week totaled well over 20,000 tons, including all grades but principally foundry. Demand is greater than can be supplied, due to the sold up condition of the furnaces. A large percentage of the iron sold here during the past week was for prompt or nearby shipment, and some of it was for fourth quarter and some for first quarter of 1920. Prices show a wide spread. Prices which were done on 2.25 to 2.75 silicon for third and fourth quarter during the past week ranged from $47.50 to $50, eastern Pennsylvania furnace, and there were some sales of prompt at the higher figure. Some 2.75 to 3.25 silicon for fourth quarter was sold at $55, eastern Pennsylvania furnace. Central Pennsylvania foundry has sold during the past week both for this year and next at prices ranging from $48.25 to $49, furnace, for 2.25 to 2.75 silicon. The Virginia Iron, Coal & Coke Co. has increased its price on foundry for first half to $47, base, furnace, and has taken on a little business at the new price. The old $45, furnace, base, has been done during the past week on some stock Virginia iron. Some last half Virginia foundry continues obtainable at $46, base, furnace. Considerable Buffalo foundry has been sold at resale at $45, base, Buffalo. Considerable high silicon Ohio iron has been resold in this district at higher than $55, delivered, for 4 per cent. Some off malleable has been sold in this district on the basis of $48.50, eastern Pennsylvania furnace, for standard quality.

Bessemer Iron Is Stronger

Pittsburgh, July 27.—Further strength in the market for bessemer pig iron has developed during the past week and a sale of 1000 tons by a nearby furnace interest to a Pittsburgh consumer at $47 valley furnace, delivery to be made at the convenience of the furnace, has been made. This grade now is quotable at that level. Some smaller sales of bessemer iron, two of them involving 250 tons each, however, have been made by a valley furnace interest at $46, indicating that this latter figure has not entirely disappeared, but it undoubtedly is true that the higher level made may easily be obtained. Another sale of bessemer iron involved 600 tons and was made from this district at $46 valley furnace. A Pittsburgh furnace interest has sold approximately 1000 tons of foundry iron, some of it running as high as 3 per cent in silicon, on a basis of $46, valley furnace. Sales of 300 tons of No. 2 foundry iron (1.75 to 2.25 silicon) at $46 valley furnace and 300 tons of foundry (2.75 to 3.25 silicon) at a price said to be equivalent to $45 valley are reported. Inquiry for both basic and malleable iron is fair. Two inquiries for malleable involved lots of 1000 tons and 500 tons for delivery over the remainder of the year. No sales of this grade are reported but furnace interests say that if they were in the market they would ask $46. Inquiry for basic iron also continues to be active. The Central Steel Co., Massillon, O., has an inquiry out for 3000 tons of basic iron. Small sales of 8 per cent silveries on a basis of $58 furnace for prompt shipment are reported. The 6 per cent grade is quoted at $54.50, 7 per cent at $56, 9 per cent at $60 and 10 per cent at $62.50. Ten per cent bessemer ferrosilicon is quoted at $67.50, 11 per cent at $70.80 and 12 per cent at $74.10 furnace. No. 4 furnace of the Shenango Furnace Co. is down owing to lack of fuel. The Carnegie Steel Co. now has 38 of its 59 stacks in blast, having added two during the past week. The transportation situation continues to be the principal factor in the market for pig iron, some consumers withholding inquiries in the hope that a better car supply will bring about lower levels of fuel and that this in turn will mean a decline in the price of iron. There has been no improvement in the transportation situation, however, to justify such a development in the near future. Other consumers are out of the market because they find it impossible to get iron by reason of transportation restrictions. The Pennsylvania railroad has an embargo on everything through the Pittsburgh gateway, east and west, effective at Rochester, N. Y., and this has set off shipments of iron from the valley into Pittsburgh.

Furnaces Forced to Bank

Buffalo, July 27.—At least two furnaces in this district have been forced to bank because of insufficient supplies of coke. The coke situation is becoming worse. Even at a cost price of $19, furnace interests find it impossible to obtain adequate supplies. Most of the furnaces are getting only a percentage of normal production; in many instances about half their capacity. Demand for iron seems to be more pressing than ever, but makers have practically nothing to offer. Only about 1000 tons of iron were sold in this district during the week. Rising costs forced one furnace which had taken some 1921 iron to withdraw from the market on this delivery, and all other furnaces are holding off before contracting for the first half. One interest will not quote for next year's delivery until the last quarter of this year. The 1000 tons sold consisted of approximately equal parts of foundry and malleable at regular prices to old customers for last quarter delivery. An inquiry for 2000 tons of basic, on which $45 was quoted, has been withdrawn.

Market Quiet in Cleveland

Cleveland, July 27.—Inquiries for iron for 1921 delivery continue to be received but so far none of these are for basic and no orders for either foundry or malleable are being booked. Deficiencies in transportation largely are responsible for this, but the price of coke is also an important factor. Lake furnaces continue to quote $45 base furnace and it is possible prices will go higher if coke continues upward, although so far this has not been done.

Sales Light, Prices Firm

Cincinnati, July 26—The pig iron market has been relatively quiet during the past week, but prices have been firmly maintained and sellers are not forcing sales. With lighter sales, which have been made up largely of carload lots and other small orders, there is reported some good inquiries. A large Indiana manufacturing concern inquired for 6000 tons of southern iron, but southern furnaces were unable to consider the order, and the business was placed through the Chicago market. A Hamilton, O., consumer is in the market for 3000 tons of pig iron

for delivery within the next 90 days or four months. A consumer in Moline, Ill., who has been in the market for a considerable tonnage of iron has not yet placed the order, and another consumer who inquired for an early delivery order has announced that its order will not be placed until September. Car load lots of Southern No. 2 (1.75 to 2.25 silicon) aggregating about 2000 tons have been sold during the past few weeks for prompt delivery to St. Louis, Chicago, Indianapolis and scattering points in Illinois and Missouri. The southern product is strong at $42, base grade, for last quarter, and one producer near Birmingham has advanced its price to $45, Birmingham, for that quarter. A Virginia furnace has advanced its selling price for first half delivery from $46 to $47 for base grade. Northern iron inclines higher, a few sales being reported in the valley district at $46, furnace.

St. Louis Market Quiet

St. Louis, July 24—The pig iron market here is quiet. Inquiries are scarce, and the only sales reported are of car lots for filling in purposes. Consumers throughout the district are well covered for the balance of the year, and supplemental purchases are to cover temporary deficiencies due to failure of material under contract to arrive promptly. Uncertainty as to prospective costs of production is making for caution on the part of furnaces, and they are unwilling to negotiate for tonnages further ahead than the third quarter. There is, however, good quantities available for delivery. Despite the lack of interest, prices are very firm. Representatives of the furnaces say there is absolutely no reason for reducing prices at this time, and it is not likely any revisions downward will be made this season.

Deliveries vary widely in efficiency. One interest which had tonnages to deliver in the first quarter has not shipped the materials. Where deliveries are slow the reason given is the car shortage, but some users here say this does not entirely cover the situation, as they are getting high priced iron, while tonnages on cheaper contracts are not arriving. One foundry interest writes that it is getting only enough cars to take care of current output, which is loaded from the furnace, while the iron for earlier delivery is piled in storage yards, and can not be loaded save at the expense of congestion at the plant proper.

Southern Iron Still Selling

Birmingham, Ala., July 27—Many inquiries for pig iron are being received and those companies still in the market are selling small tonnage. Some of the inquiries relate to iron for shipment next year. Quotations continue firm on a basis of $42 per ton for No. 2 foundry, (1.75 to 2.25 silicon). It is estimated that not more than six weeks' make during the balance of the year will be available. Two companies are out of the market and may not be able to re-enter before the close of the year. Among the inquiries received the past week were several for iron for export, including two from South America for 1,500 tons. Transportation difficulties are still encountered. Requests have been received from consumers asking prompt deliveries, and there has been some intimation that it might be well to rush shipments to get prior movement before the expected advance in freight rates.

Coke Continues Upward

Spot Foundry Selling at $18.50 to $19.50, while Bulk of Furnace Coke Is Going at $18.50—New England Prices Also Advanced

Pittsburgh, July 27.—Prices of coke continue to advance and spot furnace now is quotable at $18 to $19, ovens, and spot foundry coke at 18.50 to 19.50, ovens. These high levels are due to transportation difficulties combined with the eagerness that some furnace interests have shown to cover requirements.

A user in the Buffalo district is said to have taken a good sized tonnage of spot furnace coke at $20, ovens, the highest figure reported for this grade of fuel but the report has not been verified. Most of these sales for spot delivery have been made at $18 to $19, with perhaps $18.50 the prevailing figure. One nearby furnace interest has closed for a fair sized tonnage of spot fuel at $18.75. Spot foundry coke is reported to have been sold at as high as $21 but the bulk of this kind of tonnage is said to be going at $18.50 to $19.50. Steelworks interests are showing considerable concern over the lake coal car priority order of the interstate commerce commission for shipments of coal from mines west of Latrobe, Pa., because of the diversion of this tonnage to the Northwest, some of which otherwise would go to them, and this has decreased by-product output. Production of coke in the Connellsville region for the week ending July 17 was 171,795 tons as compared with 162,390 tons during the preceding week, according to *The Connellsville Courier*.

Price Again Advanced

Boston, July 26.—The New England Coal & Coke Co., again has advanced its price on by-product coke. It is now $21.90, delivered to consumers. The company reports continued difficulty in obtaining coal, and finds it necessary to ship coke subject to the prevailing price at time of delivery. The Providence Gas Co. also is having difficulty in obtaining coal, and is behind in its shipments. The reduced output of these two by-product interests is forcing Connellsville coke into New England in increasing amounts. Spot beehive coke has sold freely during the week at $23.90, delivered. Even this price, however, is unable to bring out sufficient quantities of coke for the urgent demand and some of the larger interests have sent men into the Pennsylvania coke region to make a personal appeal for shipments. An incident showing the inconsistency in the market is the receipt of $7.50 coke on an old contract, and $19.50 spot coke in the same shipment and from the same Connellsville interest, by a Massachusetts consumer.

By-Product Price Up

New York, July 26.—The New England Coal & Coke Co. during the past week again advanced its price on by-product foundry coke, and the new figure, for this district, is $19.50, ovens. Some business has been transacted in this district at the new price. The Seaboard By-Products Coke Co. continues out of the market; this interest now is producing at a slightly improved rate but still is behind on deliveries. Considerable beehive foundry coke for prompt and August shipment was sold during the past week in this district at $19 to $1.950, Connellsville. Demand for spot coke is not quite as active as it was, but it is large enough to absorb all the tonnage that is offered.

Few Inquiries for Coke

Cleveland, July 27.—Few coke sales are now being made in this market. Inquiry has fallen off, buyers, like sellers, apparently realizing there is none to be had at any figure. Practically all furnaces, however, are supplied for the present but future requirements seem to be restricted solely by the inability to get adequate supplies or to ship products. Foundries are seeking spot coke in small lots and one or two sales have been made at $20. Furnace coke has not changed from the $18 level quoted a week ago.

Higher Schedule Prevails

Cincinnati, July 26—Coke prices are higher and there is a continued scarcity of the product of ovens supplying this market. Shipping conditions have not improved, and a relatively small tonnage of coke is being distributed. Most sales have been at $21, and the market appears to have adjusted itself to the higher schedule of prices with that figure accepted as the nominal quotation for all grades. Foundries in Cincinnati and nearby points report that their supply of fuel practically is exhausted and that they are unable to buy sufficient tonnage for immediate delivery to meet their requirements. A number of shutdowns are in prospect unless the situation is soon improved.

Sales at $20 in St. Louis

St. Louis, July 24—There has been no change for the better in the coke situation in this district. If anything, the scarcity is more acute than heretofore. The car shortage and high money rates still are annoying factors. Every day brings in endless inquiries and orders for tonnages, large and small, but dealers are unable to sell anything. The quotation of $18 for 72-hour Connellsville 72-hour foundry coke virtually has disappeared, and sales were made in the week at $20. These transactions were not for spot alone, but included several contracts covering the balance of this year.

Higher Prices Offered in South

Birmingham, Ala., July 27—Coke is in strong demand and a little tonnage has been sold at $15 for 72-hour coke, the maximum price. Many inquiries are being received but there is more or less uncertainty, although the peak of the strike in the domestic coal section of the district has been reached and but little apprehension exists that the trouble will spread to other mines. Coke production is holding up well. Some bee-hive ovens met with reverses because of the strike, but these are being overcome with an increased production at by-product ovens.

Bar Prices Up In East

Prices Now Range from 4.50 to 5.00c, Pittsburgh—Demand Is Heavy but Transportation Is Limiting Factor

Pittsburgh, July 27—One large independent interest in this district has withdrawn from the market for merchant steel bars for delivery over the fourth and first quarters because of heavy commitments. Orders are being taken only to round out requirements on bookings previously made. The quotation of $3.00, base, is being maintained by some producers who report that the demand is strong, particularly for the smaller sizes, and considerable business is being declined. Output is being held down by the shortage of transportation facilities. Producers of hard bars are having a great deal of difficulty in obtaining billets and as a result are running on curtailed operations. Some of the old business is being taken care of by drawing on stock piles. Demand for hard bars is somewhat easier. Concrete reinforcing bars and those rolled from billets are quoted at $4.00 to $4.35. Export demand is strong and the quotation by some independents for this business is $4.50, base.

Eastern Prices Increased

New York, July 26.—The eastern bar iron market has stiffened perceptibly, with prices now ranging 4.50c to 5.00c, Pittsburgh. It is understood that one or two mills are still quoting 4.25c, but this figure appears to be largely nominal. This further increase in prices is attributed to a continued good demand from both foreign and domestic consumers, and to the recent increase in puddling rates. Makers claim that considerable tonnage is now being purchased for export to South America, although there are no especially large lots involved. This foreign business is being booked at domestic market levels. The mills are offering deliveries from five to eight weeks.

Demand Is Active

Pittsburgh, July 27.—Demand for cold finished steel bars in this district continues active. Some mills are committed six months ahead on smaller sizes and from 30 to 60 days on larger sizes. The demand for the larger sizes is fairly heavy but not so great as for smaller bars. Shipments are going forward fairly well although mills are compelled to load cars, which ordinarily should go to the shops for repairs to the bottoms. The established market continues between 4.10c and 6.50c, although from time to time sales as high as 10.00c are heard.

Operations at Fair Rate

Pittsburg, July 27.—Operations of nut, bolt and rivet plants in this district are proceeding at a fair rate, one large producer running at 80 per cent of capacity. This comparatively high rate of production is due partly to the fact that incoming material is shipped by river. Producers of these lines generally also report that outbound shipments are slightly improved and have about equal specifications. Makers appear to be sold from four to five months ahead in some departments, and eight to nine months in others. Prices remain unchanged. Specifications are not so heavy as they have been.

Bolt Demand Huge

Chicago, July 27—Users of bolts and nuts continue to be active in their inquiries and lots running into the millions of pieces are offered makers. Most producers have sold for the remainder of the year to users and for entire third quarter to jobbers, and while some additional business is being taken it is being selected carefully. Raw material is being received in better volume from mills and less interference with production from this cause is being met. Prices continue unchanged and firm.

Little Demand

Noted in Ferroalloys Market—English Ferromanganese at $195

Pittsburgh, July 27.—Dullness still prevails in the ferroalloy market. The absence of inquiries is noted on nearly every hand and only in one case is a fair supply of inquiries being received. A carload of ferromanganese was sold a few days ago at $195, freight allowed, it is reported. The buyer has been seeking this tonnage for several days and has been quoted freely at $225. While the trade here continues to quote $200 for forward material and $225 for spot shipment, these quotations have failed to create much interest. Reports are heard that a consignment of Japanese ferromanganese arrived at New York recently and is being held at about $190, tidewater. Not much interest is shown in the ferrosilicon market in this district. Material is being offered freely but no sales recently are heard. Ferrosilicon, 50 per cent content, still is quotable between $80 and $85 both for immediate and forward delivery.

One sale of two carloads of 18 to 22 per cent spiegeleisen was made this week at $75, furnace. The material is for shipment into the Detroit and Chicago districts. A quotation of $130, furnace, was made on a tonnage of 35 to 50 per cent spiegel recently by one maker here.

English Ferro Sold at $195

New York, July 26.—Sales of approximately 700 tons of English ferromanganese for shipment over the second half, including some for first quarter of 1921, at $195, c.i.f. tidewater, comprised most of the business in this metal during the past week. Some prompt ferromanganese also was sold at $225, delivered. There are several inquiries for ferromanganese but none of them are large. Most of these inquiries are for future shipment and there is less demand for prompt. The market in spiegeleisen is featureless.

Prompt Ferro At $200-$210

Philadelphia, July 27.—Prompt ferromanganese is being sold resale at prices averaging $200 to $210, delivered. White standard spiegeleisen is bringing $75, furnace. There have been sales at resale at somewhat lower levels and also sales of 16 to 18 per cent grades at $70 furnace.

Ferro Demand Light

Chicago, July 27.—Demand for ferromanganese is light and prices are somewhat less than earlier in the year. At present third quarter and prompt alloy can be bought at $225 per ton, while entire last half can be covered at $200. Some resale material has been transferred but nothing of this sort is in the market at present. Spiegeleisen is in small demand at unchanged prices.

Railroad Buying

More Brisk, but Early Deliveries Cannot Be Secured

Chicago, July 27—Railroads are getting into the market for all forms of steel to a greater extent than for a long time, but find it difficult to place orders for definite delivery or to obtain early shipments on material already bought. This is true despite the honest desire of mills to expedite railroad material to assist transportation to better efficiency. Inquiry for large tonnages of rails for 1921 delivery is being received, as well as for track fastenings for earlier delivery. The rail mill is not yet ready to open its books for next year and this tonnage is simply accummulating without action. That a new schedule of prices is likely for next year is becoming more apparent as time passes. Already the low quotation of 2.75, Chicago, on tie plates has disappeared and nothing under 3.00c, Chicago, is now heard. The leading steel producer is sold for all its tie plates for this year and is out of the market on that product. On other forms of fastenings it is selling for indefinite delivery at prevailing quotations. A western railroad inquiring for 5500 tons of tie plates is expected to close this week. This involves about 800,000 plates. The American Car & Foundry Co. has taken 300 steel underframes for the Illinois Central railroad, requiring 1400 tons of steel, in addition to 300 cars for the same road, requiring 2100 tons of steel. The Chicago, Milwaukee & St. Paul railroad probably will place 3000 cars this week, requiring about 15,000 tons of steel. This seems likely to go to an independent mill.

Inquire for 750 Hoppers

New York, July 26.—A leading inquiry in the car market is that of the Pennsylvania railroad, involving between 500 and 750 hoppers. Other sizable inquiries include 150 tank cars for the Tennessee Copper & Chemical Corp., 61 Broadway, New York City; 50 gondolas for the American Steel & Wire Co.; and 150 hoppers for the joint purchasing commission of India. The E. M. Jones Co., Toledo, O., is reported to be inquiring for more than 500 freight cars. Two middle western railroads have closed recently for 800 stock cars, the Chicago & Northwestern buying 500 from the Bettendorf Co., and the Illinois Central, 300 from the American Car & Foundry Co. Other orders include 20 tank cars for the Northern Petroleum

Co., Pittsburgh, the business going to the Pennsylvania Tank Car Co. The Baldwin Locomotive Works has taken orders for 12 locomotives for shipment to Cuba, the largest involving six for the Central Jaronu. In addition to this equipment, 10 locomotives are being inquired for by the Havana Central.

Demand Is Light

Pittsburgh, July 27.—Not much demand for light rails exists in this district. One consumer of 50-pound standard rails is asking for quotations on 2400 tons. An independent maker quoted $70, mill. Some railmakers here are booked solidly over the remainder of the year and are not in a position to consider business, unless for 1921 delivery. Makers of spikes report a good demand for both large and small material. Mills are booked 30 days ahead on large spikes and 60 days on small. Considerable material is being forwarded to mines where repair and extension work is under way.

Shipments Much Better

Chicago, July 27—Improvement in car supply to steel mills has been gradual over the past few weeks until it has been sufficient recently to care for current production and furnish an excess from time to time which has made it possible to ship practically all the finished steel piled on mill yards. The tonnage piled at present is little more than normal. Shipments of this steel has assisted consumers materially in their operation. Railroads and agricultural implement makers are pressing mills for delivery of material on orders and the former are also seeking to buy further in practically all lines. General demand is somewhat less than formerly. Automobile and building industries are demanding less railroad equipment for transportation on their raw materials, which is responsible in part for the better supply of cars. Bar iron mills face the probability of shutting down within the next fortnight if the present strike of bituminous miners is not settled promptly, as they have reserves for only a few days. Producers of this material have heavy orders on books and will be busy many weeks under best operating conditions. Small sections are particularly well sold, though a premium has been asked on them for some time. The quotation is steady at 3.75c to 4.00c, mill. Hard steel bars rerolled from rails are in less demand, though new business is being booked at a rate equal to production and considerable backlog exists. This material is selling at 3.75c, mill.

Damages of $9000 were awarded the L. B. Foster Co., Pittsburgh, by Judge Samuel H. Sibley, in the federal court, Atlanta, Ga., in the plaintiff's suit for $30,000 damages against the Southern Iron & Equipment Co., Atlanta, Ga. The Foster company claimed that the failure of the Atlanta concern to deliver about 600 tons of second hand rails in 1917 had entailed the loss sued for because of the advanced price paid later.

Canada's revenue from income taxation this year will total $40,000,000, or slightly less than last year, according to official estimates.

Exporters Seek Plates

Railroads Have Not Closed on Requirements for Cars—Delivery Better in West—Offsets High Prices

Chicago, July 27—While general consumers of plates are taking about their usual tonnage of steel plates, the largest single industry in need of this material is the car building trade, which is seeking protection on plate tonnages for new equipment, delivery being far too long deferred for comfort. If the Chicago, Milwaukee & St. Paul railroad places its inquiry for 3000 cars, the 15,000 tons of steel, mostly plates, will fill the books of an independent producer for the remainder of the year. Better delivery is being weighed against a higher price in this transaction. The American Car & Foundry Co. has covered 1400 tons of steel, largely plates, for Illinois Central underframes, following 2100 tons for cars for the same road. The leading local producer is sold out for the year, but books additional tonnage for indefinite delivery, while the leading Chicago independent has some tonnage for third and fourth quarter at 3.77c, Chicago.

Export Demand Increases

Pittsburgh, July 27.—Export demand for plates has increased, but the domestic market continues to be somewhat easier. Some independents are quoting $3.50 on plates for domestic requirements and $3.50 to $3.75 for export, the latter figure being asked for the 3/16-inch size. Shipments are being delayed because of the difficult transportation situation, and one prominent independent producer is taking orders for delivery in six weeks. It is reported that by reason of the easier tone in the domestic market some business has been placed at $3.25, which compares with the steel corporation price of $2.65.

Car Shortage Is Likely To Continue till Fall

Washington, July 27.—Prospects for an increase in the supply of open-top cars for the iron and steel industry grow poorer daily, and the present stringency is likely to continue until the close of the Great Lakes shipping season, early in December. With service order No. 10, giving Herman M. Griggs, manager of the Coal and Ore exchange, Cleveland, almost supreme power over the lake coal trade, in effect as of July 26, more and more open-top cars are to be diverted to the lake trade. Not only will the industry be compelled to abandon hope of relief with the expiration of service order No. 7 on Aug. 20, but also it may find its fuel supply still further liimted.

Coal cars are to be mobilized for the northwestern and New England trades. The statement is made here that it matters not how many iron and steel or other plants in Ohio and Pennsylvania are shut down through lack of fuel or of open-top cars for carrying away the finished product; the main concern now is coaling the Northwest.

Service order No. 7 amended later by order No. 9, saving open-top cars with sides under 36 inches for other industries, expires Aug. 20. So far as the northwest and New England are concerned, order No. 7 can be permitted to lapse, as the northwest's car supply is provided for by order No. 10, and New England's needs will be met by order No. 11, to be made effective next Monday or Tuesday. If order No. 7 is not extended after Aug. 20 no more open-top cars will be freed for iron and steel shipments, as until the close of navigation no open-top cars with sides higher than 36 inches will be taken out of the coal trade. It is considered possible that the interstate commerce commission may deal separately with open-top cars with less than 36-inch sides and ration this class of equipment to the more vital industries. By expediting the movement of cars from the Ohio mines to Lake Erie and back 25 per cent efficiency is hoped for.

Great concern is expressed over the Illinois and Indiana coal strike situation, as continuation of the walkout will cut deeper into the lake trade this summer and make it mandatory to make an all-rail movement next winter. This will postpone still further the time when iron and steel plants can compete wit hcoal and other commodities for open-top cars. No hesitancy is shown here in expressing the belief lower lake plants will suffer severely from now on for fuel.

May Shut Tin Plate Mills

Pittsburgh, July 27—On account of the outlaw miners' strike in Illinois, mills are underpowered at the Gary plant of the American Sheet & Tin Plate Co., and complete suspension is expected by the middle of this week. Shipments of tin plate from the corporation's mills in general are extremely low and thousands of boxes of material are piled for want of closed carriers. If relief does not come this week some of its plants, particularly in the Dover, O., district, will discontinue rolling. Independent makers report shipments equal to production. Inquiry for tin plate still is active although mills in this district are not in a position to offer much relief. Semi-finished material is not moving into tin mill yards as it should and the lack of it is hindering production at some plants. At other plants, however, it is questionable whether any fresh arrival of tin bars would increase output to any extent, due to the fact that production is hindered by the shortage of cars rather than by the shortage of steel.

Philadelphia, July 27.—A gas explosion wrecked a blast furnace and gas engine house of the Bethlehem Steel Co. at Steelton last night.

Scrap Market Stronger

Prices Firming up, with Increases Noted in Some Districts, as Renewal of Buying Sets in—Eastern Shape Makers Buying Stove Plate

FOR COMPLETE SCRAP PRICES SEE PAGE 338

Pittsburgh, July 27—During the last few weeks the scrap market in this district has been influenced largely by the transportation situation. Where material is on wheels, quotations average anywhere from 50 cents to $1 a ton over market quotations. Scrap dealers receiving material in their yards are able to reload one out of about every five cars and reconsign it to customers. The small number of cars available for shipment of scrap is due to the interstate commerce commission's ruling as applied to carriers with sides 36 inches high. Railroads have served notice on scrap dealers here that if cars having sides 36 inches and higher are loaded, they will refuse to switch or move them. Both consumers and buyers are anxious to get shipments of scrap into their yards before the new increase in freight rates become effective. The demand for all grades of scrap is fairly active. Prices have advanced for some grades of scrap, which is due largely to transportation. Heavy breakable cast is quoted from $33 to $34 a ton. Knuckles and couplers are quoted between $28.50 and $29. The price of stove plate scrap has decreased to a range of $30 to $31. The Pennsylvania railroad will close bids on Aug. 3 on 13975 gross tons of scrap. Of this, 900 tons are steel rails No. 1; 1200 tons miscellaneous rails; 1100 tons of No. 2 heavy melting steel, and 850 tons of No. 1 railroad wrought.

Boston Prices Firming Up

Boston, July 26—The downward trend of prices of scrap has been halted. Sales during the past week have not been heavy, but deliveries have improved, and prices have remained firm as of a week ago. A new demand has sprung up for chemical borings, and $17 has been paid for these rather freely by dealers, although the price has left but a small margin for them. A speculative market in heavy melting has developed. Car wheels also have figured in recent trading. One order for 200 tons was taken for delivery to a Connecticut consumer at $40. The export demand for good grades of heavy melting steel continues at wharves, Boston, with $21 being paid for sizable tonnages.

New York Prices Holding Steady

New York, July 26.—Despite the lack of new business in the local iron and steel scrap market, prices are holding relatively steady, a fact which may be attributed in a measure to the difficulty dealers and yardmen are having in filling back contracts. This, they assert, is not due to the scarcity of material, but to the shortage of cars. To this situation may also be attributed the existing dullness with regard to new inquiry. The only price change noted is in wrought pipe, the market now holding at $17.50 to $18, an advance of 50 cents.

Shapemakers Buy Freely

Philadelphia, July 27.—The outstanding feature of the scrap market is the purchase by an eastern Pennsylvania shape maker of considerable tonnage of stove plate for spot shipment at $27 delivered. Eastern plate makers are inquiring for steel scrap and are expected to buy a considerable tonnage, although there was no business in this grade in the past week, the market is strong by reason of western offers to buy steel at $26 to $27 delivered, Pittsburgh. Some dealers say they would not sell at less than $23, delivered, eastern Pennsylvania. One eastern Pennsylvania shape maker is bidding for machine turnings, but holders generally are asking for higher prices. Chemical borings have sold at $25, delivered, but this is regarded as high. Cast scrap is strong. Considerable cupola cast has sold $39, delivered.

Buffalo Market Strong

Buffalo, July 27.—The outstanding feature of the market is the purchase by a Buffalo mill of about 15,000 tons of cast iron borings at $20. This is practically $3.50 over the ruling market price. This purchase has had the effect of increasing quotations from $16.50 to $17 to $19.50 to $20, and very strong at this price. The market for heavy melting steel is strong with a local mill willing to pay $26 for almost any tonnage. This mill is not getting much tonnage even at this figure. There does not seem to be a large quantity of scrap in the territory at present. The market for cast scrap is strong and the supply is limited. There is an active demand for turnings from eastern Pennsylvania.

Heavy Melting Advances

Cleveland, July 26.—Iron and steel scrap dealers here report practically no trading from the fact that shipping conditions are the worst ever experienced. Some yards are closed on this account. Dealers are able to get permits but transportation is impossible. Prices continue upward, heavy melting steel for instance being advanced $1 a ton while increases also are made in other lines.

Buying Brings Prices Up

Chicago, July 27.—Inquiry for heavy melting and shoveling steel by the leading steelmarker in this district has resulted in purchase of about 3000 tons by that interest at about $25 per gross ton. This buyer still is in the market and apparently desires to cover considerable more tonnage. Most grades of scrap have advanced somewhat as a result of this buying, difficulty in obtaining labor for preparing scrap and the small tonnage of material moving under present railway conditions. Rerolling rails are unusually scarce and dealers are finding much difficulty in obtaining sufficient tonnage to ship on their contracts. Malleable scrap is in better demand, while cast scrap is dull. Rolling mill grades are quiet as continued operation of mills is threatened by the present coal strike. Railroad scrap is not moving in the usual tonnage. The Chicago, Burlington & Quincy railroad offers 4800 tons and the Chicago, Milwaukee & St. Paul railroad, 700 tons.

Inquiries Increasing

Cincinnati, July 26—The Cincinnati scrap market continues quiet, with prices unchanged. Inquiries for future delivery have increased, and an active buying movement in the near future is indicated.

Prices Firm at St. Louis

St. Louis, July 24.—Decided strength permeates the market for scrap iron and steel, although mills and foundries are not buying. It is typically a dealers' market, and speculation is responsible for the firmness of prices. Those who have sold short are anxious to cover. Apprehension among shorts has been aroused by the railway wage award, which, it is thought, disposes of the danger of a general strike. Anticipation of a raise in rates for the carriers is another influence, as also is the report that the United States Steel Corp. is in the market for a heavy tonnage of steel scrap, believed to be close to 50,000 tons. The St. Louis Terminal Railway association has put out a list of 1800 tons, the first in three months. A small offering of 450 tons is made by the Chicago, Peoria & St. Louis railroad, the first in more than five months by this road. Otherwise there are no railroad offerings before the market. All rolling mill grades are virtually at a standstill, but relaying rails are in demand at the recent quotations, although none are being offered. The American Steel Foundries Co. is in need of some steel scrap, but will not buy at present quotations.

Still Waiting for Improvement

Birmingham, Ala., July 27.—Scrap dealers still are waiting for improvement in the market. Stocks are being kept up to the normal size, no effort being made to speculate, although it is believed that during the coming month the market situation will be better both as to demand and prices. Quotations show a little readjustment, turnings and borings being in better demand, while No. 1 cast is still moving. Consumers of heavy melting steel are not offering any higher price than for the past four weeks, and dealers are not willing to take on contracts. Stove plate is firm. Large scrap producers are not willing to sell to dealers at concessions.

Birmingham, Ala., July 27.—Coal opertors of Alabama are making a strenuous fight for the open shop and now believe their efforts will be successful. For several weeks strikes have been in progress at a number of domestic coal mines, and production has been seriously affected. The operators have started a systematic campaign for the open shop and public sympathy is sought. Retail coal prices have gone up, and there is a scarcity, in fact to such an extent that there is some apprehension that a famine may be

felt in the winter. Coal production is improving, as a few miners are being brought into the district. Railroads have been confiscating some coal, while manufacturers have been expressing apprehension that unless more fuel becomes available their operations will be affected.

Ore Requirements

Revised Downward by Furnace Companies—Lack Coal and Coke

Cleveland, July 27.—As a consequence of slow deliveries of coal and coke to blast furnaces, certain producers of pig iron have revised their figures relating to requirements of iron ore. One of the largest operators of iron ore properties in the Lake Superior district has been notified by several of its patrons that it will be necessary to reduce the amounts of ore to be delivered to them, as they will be unable to use or store it. The precise reduction has not been determined, but it is believed it will be around 20 per cent. The tonnage affected will be large as the blast furnaces served are among the largest in this and the valley districts. While other companies have not received similar notification, so far as it can be learned, a reduction in the amount of ore consumed is considered inevitable in view of the shortage of coal and coke.

A few weeks ago the ore shippers were in doubt about their ability to make full deliveries of ore, owing to difficulties of operation and shipments incidental to the coal shortage, but it now seems assured that they will be able to forward all the ore that furnace companies will have need for. Lake shipments so far in July have been at about the same rate as last month, 6,546,000 tons having been brought down up to July 22. The month's shipments may exceed those of the preceding period by 200,000, but from an operating standpoint they are far from satisfactory. Shipments to interior furnaces still are at a slow rate, and certain companies are seeking by all possible means to obtain supplies. New demands are solely for the purpose of filling in and making tonnages now at furnace yards suitable for use.

So far as production of ore and mining operations generally are concerned, producers believe a great step forward was taken recently when H. M. Griggs, manager of the Ore and Coal exchange, Cleveland, was made virtual fuel administrator for the upper and lower lake regions, with authority to order preferential shipments for the northwest. Shipments of coal to the Lake Superior district are 50 per cent behind normal, and under the new arrangement the railroads expect to deliver 4000 cars of bituminous coal daily at lower lake ports.

Stockholders of the Jordan Motor Car Co., Inc., Sept 9 are to act on a plan submitted by the directors, to merge the company with that of the Edward S Jordan Co., Inc., into one to be known as the Jordan Motor Car Co., Inc.

Sheet Situation Clouded

Continued Piling of Material Due to Car Shortage Threatens to Force Suspensions—Eastern Demand Less Insistant, and Prices Easier

Pittsburgh, July 27—Transportation conditions continue to play an important role in sheet production. Material is piled in extremely large quantities throughout the district and much concern is felt by makers over the possibility of moving this material before production is curtailed further. Three sheetmaking plants of the corporation already are on the verge of a shutdown and unless an ample supply of closed carriers is spotted this week in the yards of these plants, complete suspension will be necessary. Most sheetmakers have a large backlog of orders, which should have been rolled and in the hands of the consumer several weeks ago. For this reason sheetmakers are not inclined to consider any additional business until shipping conditions show some betterment. In the meantime, consumers desiring any one grade of sheets available for prompt shipment are obliged to patronize brokers.

Sheets Continue Scarce

New York, July 26.—While demand for sheets does not show quite as much pressure as was reflected a few weeks ago, the supply continues scarce, and premiums for prompt shipment do not show any decline. The highest premiums are asked on full finished black sheets, for which the mills will take third and fourth quarter orders at 8.50c to 9.00c, Pittsburgh, base, but on which brokers are asking as high as 13.00c for prompt shipment. One pass black sheets can be had for mill shipment during the third quarter at 7.50c to 8.00c, base, Pittsburgh, but due to delays in transportation spot black sheets in New York are worth 9.00c to 10.00c, and anything lower is considered a bargain. Blue annealed sheets are somewhat easier to get from the mills. Prices on 16-gage blue annealed sheets, which still are scarce, continue to range from 6.00c to 7.50c, Pittsburgh, while prices on the heavier gages do not run much above 6.00c. The spot market in New York on blue annealed sheets, due to the transportation situation, continues around 8.00c, base. Plain galvanized sheets can be had from the mills at around 9.50c, base, but the spot market here is 10.50c.

Sell at Lower Prices

Philadelphia, July 27.—In some cases sheetmakers who wanted 6.50c, base, Pittsburgh, for blue annealed sheets for the fourth quarter, are selling at 6.00c. The market here is from 5.75c to 6.00c, Pittsburgh, although for the light gage the mill asking prices are as high as 7.50c. Sheets continue scarce, but the demand is not so active as recently. One pass black is bringing 7.50c to 8.00c, base, Pittsburgh, while 8.50c, base ,is quoted on the lighter gage, all for forward delivery.

Sheets Hard to Get

Chicago, July 27.—Operation of sheet mills is so much interfered with by heat and labor conditions that some producers who make their own sheet bars find the latter accumulating and are able to sell them to other mills. On this material the going price is $70, Chicago. Local producers can sell no more sheets for this year's delivery and consumers can obtain supplies only from eastern mills, at irregular premiums.

Wire Prices

Likely to be Still Further Advanced With Freight Rates

Pittsburgh, July 27—Operations of wire mills in this district range from 70 to 80 per cent and show a slight curtailment, due to the shortage of cars and workmen, especially wire drawers. Shipments do not show any improvement, although those being made by trucks have increased to a moderate extent. Demand for wire nails, both from domestic and export consumers, continues to be active but producers are showing more caution in making commitments, and sales reported are not large. Some makers have had to cut shipments by truck because of a lack of stock to meet the demand. Prices are likely to be increased further by reason of the anticipated higher freight rates. Because of this expected rail advance, some makers are withholding contract commitments for the fourth quarter, being unable to know what levels may be required in view of the increases they will have to pay on shipments of incoming raw material, four tons of which are required to make one ton of the finished product.

Advance Wire Prices

Youngstown, O., July 26.—Effective as of July 15, the Youngstown Sheet & Tube Co. has advanced its prices on all wire products, except galvanized staples, $5 a ton. This action follows that two weeks ago of the Pittsburgh Steel Co. and had been contemplated for some time, due to increasing production costs. By this advance the price on wire nails to jobbers now is 4.25c, Pittsburgh. The price on plain wire is 3.75c with an extra of 25 cents for annealing.

Nail Shipments Better

Chicago, July 25.—Somewhat improved supply of freight cars has enabled producers of wire and nails at western mills to ship their production and to take up some accumulated stock occasionally from warehouse. Some observers see a lessening of insistent demand for nails, but this is not felt by mills, as jobbers have not been able to accumulate stocks and are demanding shipment as strongly as ever. Production has been cut into somewhat by the summer season but this has not affected shipments because of accumulations in warehouse. Selling by the leading producer is being done only on the replacement basis.

Shape Demand Lagging

Structural Tonnage Placed Still Is Light, but Fair Volume of Standard Small Shapes Is Moving

Chicago, July 27—While ordinary building activity has almost disappeared in the west, particularly in Chicago, railroad and industrial demand continues to crop out here and there and furnish some tonnage to fabricators. An office building at San Francisco and a highway bridge in Idaho were let during the past few days and a reclamation plant for the Calumet & Hecla Mining Co., is practically placed, the latter involving 1360 tons. Repairs to ore docks at Superior, Wis., are pending, 1180 tons being required, and a malleable foundry at Pittsburgh will require 1650 tons. The leading interest is holding its former quotation on shapes and can accept some additional tonnages for indefinite delivery. The Inland Steel Co. has space for structural material for delivery in 60 to 90 days and is quoting 3.52c, Chicago.

Stock Material in Demand

Boston, July 26.—The past week has developed a stronger demand for shapes for warehouse trade, but orders against specifications and for fabricated material have, if anything, fallen off still further. The plans for the Schraft building, Boston, requiring 1000 tons, is being redesigned for a more liberal use of concrete and reduction in amount of steel. Contract for a $500,000 hospital at Hartford, Conn., has been let, and will require 300 tons of steel. The number of small awards using stock material has increased.

New York Market Dull

New York, July 26.—Dullness characterizes the local structural market, there being little buying or inquiry. Several sizable jobs are being figured, but they are for the most part of several weeks standing. There are also two large jobs in prospect, but it is likely specifications will not be issued before the first of next month. Prices are holding steady.

Market Inactive

Pittsburgh, July 27.—The structural market in this district is inactive although there appears to be a better feeling generally, and the volume of inquiries has increased, but the placing of actual tonnage does not reflect any improvement. The Jones & Laughlin Steel Co., has taken 400 tons for a bank building at Morgantown, W. Va., and the McClintic-Marshall Co. has taken three contracts involving 2350 tons. Once the financial situation becomes clearer and easier, it is believed that some heavy business is in prospect for fabricators. While the labor situation continues to be unsatisfactory, it appears to be somewhat better. A prominent independent maker continues to quote 3.10c for shapes for the domestic market and is making deliveries in 30 to 60 days. It is quoting 3.75c on export business.

CONTRACTS AWARDED

State armory at Waterbury, Conn., 200 tons, bids being asked.

International highway bridge over St. Johns river, in Maine, 400 tons, pending.

Factory building for the Transue & Williams Steel Forging Corp., Alliance, O., 150 tons, to the Toledo Bridge & Crane Co.

Telephone exchange, Cleveland Telephone Co., Cleveland, 300 tons, to the National Iron & Wire Co.

Manufacturing plant for Globe Electric Co., Milwaukee, Wis., 155 tons, to Federal Bridge & Structural Co.

Hydroelectric power house for Wisconsin Valley Electric Co. near Wausau, Wis., 125 tons, to Federal Bridge & Structural Co.

Foundry addition and power plant for Van Brunt Mfg. Co., Horicon, Wis., 230 tons, to Federal Bridge & Structural Co.

Reclamation plant for Calumet & Hecla Co., Tamarack, Mich., 1350 tons, to American Bridge Co.

Office building for Liverpool, London & Globe Co., at San Francisco, 400 tons, to California Steel Co.

Bridge at Owsley ferry for Idaho state highway commission, 250 tons, to Milwaukee Bridge Co.

Plant addition for Du Pont Engineering Co., Wilmington, Del., 275 tons, to Lackawanna Bridge Co.

CONTRACTS PENDING

School building, Lorain, O., 30 tons, bids being taken.

Plant for Pittsburgh Malleable Iron Co., Pittsburgh, Pa., 1650 tons, bids asked by Frank D. Chase, Inc., engineers, Chicago.

Ore pocket renewals for Great Northern railroad at Superior, Wis., 1180 tons, bids asked.

Theater and office building for Universal Theater Co., Cincinnati, 270 tons, bids asked by C. W. and G. L. Rapp, Chicago.

Plant for Leonard Tractor Co., Gary, Ind., 202 tons, bids asked.

Bank building, Morgantown, W. Va., 400 tons, to the Jones & Laughlin Steel Co.

Pittsburgh Press Bureau, 250 tons, to the McClintic-Marshall Co.

Apartment house for Fred T. French, New York City, 400 tons to the McClintic-Marshall Co.

West India Sugar Finance Corp., New York City, for shipment to Santo Domingo, 1700 tons, to the McClintic-Marshall Co.

Reinforcing Bar Market

Chicago, July 27—As a result of the almost entire collapse of building operations in Chicago and its suburbs, demand for concrete reinforcing steel has been reduced considerably from its former proportions and the market is dull. In other sections it has not been affected to the same degree. Mill shipments are far from satisfactory and it is difficult to keep reinforcing plants in operation on irregular supply of materials. Reinforcing bar producers have full order books, the result of recent active buying, and will go through the fall season on present bookings. The market is strong and price recessions are not expected to follow this condition. Tonnages recently placed include the following:

Building for Edward Katzinger Co., Chicago, J. W. Snyder Co., contractor, 400 tons, to Paul J. Kalman Co.

Building for Columbia Colortype Co., Chicago, R. C. Wieboldt, contractor, 400 tons, to Paul J. Kalman Co.

Foundry building for International Harvester Co., Kansas City, 300 tons, to Concrete Steel Co.

Factory building, for Irving Pitt Mfg. Co., Kansas City, 275 tons, to Concrete Steel Co.

Powerhouse and sanitarium addition for Battle Creek Sanitarium, Battle Creek, Mich., 200 tons, to Paul J. Kalman Co.

Building for Badger State Tanning Co., Sheboygan, Wis., Dwight P. Robinson Co., engineers, 150 tons, to Paul J. Kalman Co.

Pipe Production

Greatly Restricted in Pittsburgh District—Plants Operate Partially

Pittsburgh, July 27—Output of iron and steel pipe mills is greatly restricted and some plants are operating on an extremely narrow basis. The National Tube Co. is able to operate only partially at its McKeesport, Pennsylvania, Riverside and Continental works owing to the great amount of tonnage that has been piled and the inability to get cars to make adequate shipments. New business that is being taken is for old customers only and generally represents replacement orders. The output of a number of mills has been exceeding threading capacity, and in view of the decreased production the threading departments are making some headway in catching up. Some mills are able to ship only to Pittsburgh coal regions in cars which are en route to mines.

Eastern Trading Falls Off

New York, July 26.—Trading in the eastern cast iron pipe market continues to fall off, although the situation is far from dull, with numerous small private inquiries comprising the bulk of current demand. Some sellers assert they would welcome for the time being at least a still greater falling off in business owing to the difficulties they are having in filling orders booked. These difficulties are attributed principally to the car shortage. Prices are steady, with little likelihood of a change in either direction for some time to come.

Demand Light at Chicago

Chicago, July 27.—Inquiry for cast iron pipe continues light in the western district, practically no cities being in the market for tonnage. As has been the case recently, shops are busy on accumulated orders which have piled up through slow operation.

The American Cast Iron Pipe Co., has taken 575 tons for a contractor at Pleasant Ridge, Mich. The city of Muskegon, Mich., took bids July 25 on a carload. Prices continue strong with no tendency toward a lower level.

Southern Plants Active

Birmingham, Ala., July 27—Cast iron pipe companies have bright prospects for continuation of activity, and some specifications are in prospect that will warrant operation for some time. Sanitary pipe plants will not complete present contracts for three to six months, and by then there will be additional business as building operations pick up in this section. Foundries and machine shops have recently received further orders for engines, sugar, and cotton seed machinery. Regular machinery work also is coming in steadily.

Warehouses Quiet

New York, July 26.—No change has been noted in the local warehouse prices since the recent advance in

bolts, which are now quoted by a leading warehouse interest at net list for the larger, and 10 off for the smaller. The market continues active, plates and shapes being the only descriptions to show a tendency to lag, and as a whole the situation is somewhat better owing to the slight improvement in transportation.

United States Steel's Profits Gain

The United States Steel Corp. earned $43,155,705 in the second quarter, 1920, an increase of $1,066,686 over the first quarter. After the usual deductions the net was $31,688,304 as against $31,323,101 in the first three months. The surplus of $13,776,833 was only slightly larger than that of the earlier period. Profits applicable to the common stock were $3.96 a share in the last quarter, $3.88 in the first and $2.29 in the second a year ago. The directors, under the leadership of James A. Farrell, president, who presided in the absence of Chairman E. H. Gary in Europe, declared the usual quarterly dividends of 1¾ per cent on preferred and 1¼ per cent on common.

The Bethlehem Steel Corp. has arrangd for the purchase of 2500 coal cars.

Exporting Semifinished

Demand Particularly from Great Britain Is Fairly Heavy—Mill Operations About 75 Per Cent—Leading Producer's Shipments 60 Per Cent

Pittsburgh, July 24—Demand for semifinished material both from domestic and foreign interests but more particularly from Great Britain, is fairly heavy. Tonnages being taken by producers in this territory represent a substantial volume. Chief among the semifinished products inquired for and purchased by foreign interests are bilets and skelp. Some makers are selling 4 x 4-inch billets at $65, and smaller sizes at $70, and skelps at 4.00c. These prices compare with $65 to $70 and 3.25c., respectively, for domestic business. Rerolling billets still are being quoted between $65 and $70. Domestic business for all grades of semifinished material is quiet. One company here recently took on 4200 tons of sheared skelp at a price said to be 3.50c. Grooved and universal skelp is quoted by one maker at 3.25c. and sheared skelp at 3.50c. Open-hearth sheet bars are quoted at $75 and the bessemer grade at $70. Wire rods still are in good demand. Some makers are booked throughout the third quarter and are accepting fourth quarter business on the basis that shipments are to be at the mills' convenience. The latter policy is being followed to protect the manufacturer against increased freight rates on inbound raw materials. High carbon rods are commanding between $85 and $100, mill. While reports are current that soft wire rods have been sold at $80, sales do not justify changing the going quotation of $75. Due to a slight decrease in production on account of the hot weather last week and a moderate improvement in shipping conditions, there appears to be less piling of material. Better deliveries of coal and ore are reported by one prominent steelmaker. Shipments of one large producer are estimated at 60 per cent. The Carnegie Steel Co. placed one stack at its Duquesne works, and one stack at its Ohio works in blast this week, making 38 active stacks. It is operating at 75 per cent of ingot capacity, which represents the average output in this district. The tonnage of steel piled in this country is estimated conservatively at 2,225,000, one interest alone having nearly 1,000,000 tons stocked.

Mine Operations Increase as Fuel Is Assured

Duluth, July 27.—Further improvement is shown in iron ore shipments from Minnesota range to docks. Mine operators are speeding up operations, with the assurance that coal supplies will be ample. The ore movement from the Great Northern ore properties is being acclerated. Twenty-three ore cargoes are being loaded out today at Allouez bay docks, and 24 boats are scheduled to arrive today. Shipments from the mines of the Oliver Iron Mining Co. mines are up to schedule.

New Bulk Freighters Sold

Cleveland, July 28.—The steamers M. E. Farr and L. M. Bowers now being built by the American Shipbuilding Co., have been sold to G. A. Tomlinson, of Duluth, and James E. Davidson, of Bay City. The steamers are 600 feet over all, and each will carry 13,000 tons. The Bowers is ready for delivery, while the Farr will not be brought out until fall.

Barge Line Is Opened

New York, July 26.—The new canal barge line between Buffalo and Jersey City, by way of the Erie canal, was opened yesterday when a steel barge of the Transmarine Transportation Co., with freight carrying capacity of 22 freight cars left for Buffalo.

Sales of the Fairbanks Co. in June were $2,279,848 as against $1,138652 in June 1918. For the six months ending June they aggregated $12,126,518, nearly $7,000,000 more than the $5,859,453 reported in the first half of 1919.

The Nonferrous Metals

	‡Copper	Future Straits N. Y.*	†Lead New York basis	Zinc St. Louis basis	Aluminum	Spot antimony	Nickel Ingot
July 21	19.00	49.00	8.50	7.90	33.00	7.25	43.00
July 22	19.00	48.75	8.50	7.85	33.00	7.25	43.00
July 23	19.00	49.00	8.50	7.85	33.00	7.25	43.00
July 26	19.00	49.25	8.50	7.85	33.00	7.25	43.00
July 27	19.00	49.37½	8.50	7.85	33.00	7.25	43.00

*Future shipment from Singapore or London.
†American Smelting & Refining Co.'s price.
‡Producers, second quarter, prompt and July; third quarter, 19.25.

NEW YORK, July 27.—Business in the nonferrous metal markets has been slow throughout the week, consumers manifesting little interest in any line. The Waterbury strike has practically reached an end with the strikers returning to work and the rolling mills have ordered shipments on old orders for copper and zinc. Some of them also have written customers advising them as to when deliveries may be made on standing contracts. This action has stiffened the tone of the major copper market, but there has been no change in prices. The outside or minor copper market, declined, but for technical reasons.

The increase in wages to railroad employes removed one cause for market worry, but now the prospect for increased freight rates at any early date has caused both buyers and sellers to move cautiously. Freight rate increases always affect the entire complex market structure. In general, the congestion of traffic is causing delays in shipments and operations and the improvement in this direction is very slow. The retarded operations of sheet and tin plate mills continues to exert a decided effect on the tin and zinc markets.

Leading copper producers has continued to ask 19.00c, delivered, for electrolytic copper for prompt to October shipments, inclusive and they have taken further business at this figure. In the outside market, however, prices had gotten so close to the producers' quotations that there was no inducement to buy outside metal. Consequently, the outside market was scaled down until electrolytic for spot and early August deliveries was freely offered at 18.75c to 18.62½c, delivered, with business at the lower figure. The market has been almost devoid of feature. The price of casting copper is about 18.12½c to 18.25c, New York, with demand light. Business in ingot metals also has been rather slow, but makers has had their hands full filling old orders.

The American Smelting & Refining Co. advanced its lead price $10 a ton to 8.50c, New York. Owing to the relatively low price of lead in the East, as New York is a port of entry for foreign lead, the leading intrst also is quoting about 8.50c, East St. Louis, instead of quoting 25 points more at New York than St. Louis, to cover freight differentials. Spot lead in the East has been extremely scarce, holders asking up to 9.62½c, New York. In the outside market independent sellers have been quoting 8.35c, St. Louis. The whole lead market is irregular and disorganized and prices in almost every case are a matter of negotiation.

The zinc market has been slow, with producers and consumers both going slow. The zinc market has been hovering around the cost of production and on this basis producers have not been anxious to take business, while slowing down of galvanizing mills has meant a curtailment of consumption of prime western. Prices eased a little during the week, dropping from 7.90c to 7.85c, East St. Louis, for prompt and third quarter shipment. Brass mill special continued quoted about 8.15c to 8.25c, St. Louis.

The tin market was dull, with little interest shown either by dealers or consumers. There has been no real buying movement in tin since winter and there are no prospects for a revival of active buying in the near future. Prices for Straits tin eased off a little, due to the further break in sterling exchange to below $3.80. Spot and future shipments Straits tin could be had at about 49.25c on July 28. Banca tin has been quoted about 1c to 1¼c below Straits and 99 per cent grades about 2½c below Straits.

Exporters Interested In Germany

Some Important Trades in Negotiation with Former Enemy Shipbuilders—Large Pig Iron Order Received from Europe—Business In General, However, Is at Low Ebb

NEW YORK, July 26.—E. H. Gary's departure for Europe has a deep significance in export circles This is due not only to the fact that the head of the United States Steel Corp., is planning to look over the foreign field, but also to the coincidence of the departure of several important exporters to Europe. The past week also was marked with a significant cable dispatch from Germany which called attention to the fact that an important American steel and engineering products company has established a branch in Hamburg. This company, it was said, will supply American construction steel to German shipbuilding yards. Unofficial confirmation of the pending of this important deal was had in this market although the company preferred to withhold all details until suitable credit arrangements have been made. It is understood that the German yards are slack for work, that many neutral countries of Europe are anxious to make contracts for new tonnage with these yards, but they have no materials upon which to work. Provided the proper financial arrangements can be made the sale of plates and shapes for shipbuilding to Germany will total into the largest tonnage so far contracted for in the United States this year. One export house reported that Germany is at present in the market for 40,000 tons of ship plates, which has been regarded in some quarters as a feeler.

A deal of but secondary importance was the reputed European inquiry for 18,000 tons of No. 2 foundry pig iron. Peculiar circumstances surrounded this sale, the exporter making it not knowing exactly where it was destined other than to Europe. He said that it went either to England or Belgium, both of which are anxious to obtain pig iron, but that most likely it is ultimately destined for Germany.

Shipments on all the old orders are going forward rapidly. It is now extremely easy to obtain G. O. C. permits from the railroads and as a matter of fact it is easier to make a rail shipment on export goods than it is to make rail shipments for domestic account. However, the exporters are not buying anything on speculation.

Nails were easier during the week, much being offered at from 5.75 to 6c, Pittsburgh. Tin plate has been sold for $9.50, Pittsburgh base, and a lot of blue annealed sheets was offered for 4.50c Pittsburgh. It was discovered in connection with these sheets, however, that the mill had contracted to deliver in June but was postponing until November next. The exporter could not hold that long and was willing to sell out. Galvanized wire, on Japanese cancelations, was purchased at 4.75c, mill base. In another quarter it was reported that galvanized wire is selling for 5.50c, Chicago. While all the factors indicate a stagnation to the export market just at present, it is forecasted that the buying movement will be felt again about September next.

There is a demand in Holland for lathes, planers, drilling and shaping machines. The machine tools in that market are largely of German and United States manufacture.

Sweden has obtained some valuable locomotive contracts in Russia. France has purchased 500 tons of tank plates in the United States. Finland has purchased a small tonnage of galvanized wire. Constantinople is inquiring for copper, brass and nails. Norway has purchased 500 tons of ship plates. Scandinavian inquiries now in the market call for 5000 tons of wire rods and 5000 tons of pig iron, No. 2 foundry. Spain has placed a small order for tin plate.

Among the new English inquiries noted in the market are 2000 tons of billets, and 20,000 boxes of tin plate, 20 x 28 inches. Among the British colonies American exporters are able to continue to do business. The demand for motor cars in South Africa is holding up, despite the fact that gasoline there costs 75 cents a gallon. Australia has modified her import restrictions on stranded copper wire, automobile bodies and some other articles. India shows a demand for hardware and motorcycles. Many new mills have been built in India recently and American machinery is finding a market consequently there. Australia has purchased some galvanized wire and is now inquiring for 500 tons more.

A new Japanese inquiry has been received for 120 miles of track. This is looked upon with considerable skepticism, however. Governmental permission to build a monorail electric tramway over the rivers and canals in Tokyo has been requested. The proposed capital of the company being promoted is $7,500,000. A sale of 150 tons of galvanized sheets to the Philippines was noted last week.

Argentina is inquiring for sheets, barbed wire, nails and nail wire. Some sales of oval wire and galvanized wire were noted. The barbed wire sales to Argentina have been in carload lots. A sale of 100 tons of sheets was reported. Buenos Ayres is still holding up the orders for 27,000 tons of cast iron pipe upon which quotations have been made four times. It is expected that this business will be placed shortly.

Brazil has been inquiring for some oval wire, and has purchased some galvanized wire. The demand for cultivators in Brazil is being met in part by a French firm which has introduced successfully two new types of cultivators, one for large scale cultivation, and the other a garden cultivator.

An inquiry for two diesel engines for mining purposes has been received from Bolivia. The proposed railway to connect the port of Antofogasta, Chile, and the Argentine in the north through Salta, is about to be approved. American railway interests have sent a representative to make preliminary studies. Ecuador has purchased some staples and Venezuela is inquiring for barbed wire. An American has been granted a contract by the Venezuelan government for the construction of an electric railway from San Felix on the Orinoco river to the Guasipati gold fields, as well as for the rental of the Caroni river falls to provide the necessary hydroelectric power.

The Peruvian Steampship Co., is desirous of having built in the United States four motor ships of the full diesel type with a capacity of 8000 tons dead weight, a speed of 11 to 12 knots and accommodations for 60 first class passengers.

Among the inquiries received from Central America were noted 500 tons of sheets and like amount of bars. Porto Rico has purchased 1000 kegs of nails, and Cuba has been buying sheets and nails in small quantities. One Cuban nail order booked was for 1000 kegs. Cuba is also inquiring for reinforcing bars and pipe.

Decision Upholds Basing Point

Federal Trade Commission Votes 3 to 2, Retaining Long Established Practice by Dismissing Application for Complaint—Commissioners Take Widely Different Views and Loophole is Seen for Possible Further Action

WASHINGTON, July 27.—By a vote of three to two the federal trade commission has dismissed the application of the Western Association of Rolled Steel Consumers and other interests that the Pittsburgh basing point practice be declared "unfair competition" and in violation of section 2 of the Clayton antitrust act, and hence be forbidden. For the present, especially under the present trade commission act, the basing point practice goes unchallenged, but scrutiny of the various opinions warrants the belief that the door has not been closed so tightly as the dismissal would indicate.

Chairman Murdock and Commissioner Colver are conclusive in their opinions the basing point practice is no violation of law. Commissioners Thompson and Pollard are equally certain the practice is such as to justify further investigation, at least. The deciding vote was cast by Commissioner Gaskill, who said: "The state of the law as I see it leads me to the conclusion that the issue of a formal complaint is not in the public interest because it is useless to develop further a state of facts for which this commission may not suggest a remedy if the remedial order should be indicated." This is interpreted by some to mean that if he can be shown how a more fair practice could be painlessly substituted, Commissioner Gaskill's vote might be changed.

The decision comes after some eight months of investigation on the part of the commission, which claims the case is the most important one yet put up to it. The application for relief was directed mainly at the United States Steel Corp. and the decision permitting the continuation of the practice is partially the upshot of the decision of the United States Supreme Court in refusing to dissolve the corporation. Had the corporation been ordered dissolved it is entirely likely the decision would have been different. The crippling of the commission by the so-called Gratz decision, handed down by Justice McReynolds of the Supreme Court, was a large factor in Commissioner Gaskill's conclusion. Practically for the first time in its history the commission gave the reasons leading up to its verdict.

In addition to the Western Association, others joining in the application included the Superior Commercial club, Superior, Wis.; the Birmingham Civic association and the Birmingham Steel Base Bureau, of Birmingham, Ala.; the state of Minnesota, and various organizations in Duluth.

In concluding his opinion, Chairman Murdock said:

"I have not reason to believe that the device of a base price plus freight from Pittsburgh for rolled steel products as now practised is a price discrimination within the meaning of section 2 of the Clayton act, or an unfair method of competition as contemplated under the act creating the federal trade commission and defining its powers."

Previously in his opinion Mr. Murdock had said:

"In the consideration of the problem, it is useful to consider two facts. The first fact is the process of unification of an area so vast as the United States into a single market which seeks a common price. This process is in progress in face of the great difficulties of magnitude of territory, and of equitable and adjustments between the advantages and disadvantages of competing territories. The second fact is the centralization of industry into large units, of which one of the respondents herein, the United States Steel Corp. is a notable example. This corporation's commanding position in the industry is not disputed. It has plants in competing sections. It has powerful influence in the market. However, if the influence of supply and demand result in this industry in a base price at the point of heaviest surplus production, the respondents can not be held accountable for this result. It would then appear that the discrimination, which is seen in the single view of the comparatives prices between sections, is not, when fully considered under the statute invoked, that arbitrary discrimination which the law interdicts, but is in fact a differential largely dictated by the laws of a market place of vast territorial magnitude looking to a common price and permitting the operations of great units with widely scattered plants."

Believes No Law Covers Case

Commissioner Colver's conclusion was pithy:

"I conclude that there is no law with the administration of which this commission is charged which is violated by the practice complained of."

He said in his opinion:

"The practice is not unfair competition with respect to the manufacturers of steel nor does it inject an unfair competitive element into the business of the fabricators. If the base price system were abolished it might result in giving some advantage not now enjoyed to certain fabricators, but it would place other fabricators at a corresponding disadvantage. Thus, at best, the shifting of boundaries of competitive fields probably would not effect the fabricating industry as a whole except to throw it into confusion. The Pittsburgh base price was an established thing in theory and practice of steel manufacture and sale when the steel fabricating industry came into being. It was one of the factors taken into consideration by fabricators when they selected the sites for their plants. It is no new thing; no unforseen factor imposed upon the fabricators. Therefor it does not project any new method of competition, fair or unfair, into the industry of steel fabrication."

Commissioner Gaskill said:

"Whatever evil there may be in this 'base plus' practice and however great may be the inequalities which result, I fail to find in the powers of the federal trade commission any remedy therefor. An unfair method of competition according to the definition laid down by the United States Supreme Court in the Gratz case must be opposed to good public morals or contrary to public policy. The question now under consideration seems to me to present a conflict between what have previously determined to be legal rights and the conception of a new and opposing claim of right based upon a changed conception of economic principle. The United States Steel Corp. is a lawful entity, lawfully owning and operating its subsidiary plants. The United States Supreme Court has established the validity of such existence and ownership. Under the law it may fix a price for the product of all its mills on a common basis. It does so, using Pittsburgh as the base. That instead of collecting all the product of its mills at Pittsburgh and fixing a price there plus freight to destination, it maintains that price and ships from the nearest mill, does not seem to me to change the owner's legal right to maintain the price of his own choosing unless and until competition compels its reduction. I do not see that this practice is unlawful as the law now stands. This commission has no power to rule upon the soundness of the economic principle."

Commissioner Pollard based his objection to dismissal of the application largely upon the ground that further investigation is warranted. He said in part:

"The proceeding is in a preliminary stage. The question at this time is not whether we shall order the respondent to cease and desist from an unlawful practice, but whether we shall serve on the respondent a complaint upon which that issue can be formally heard according to the procedure laid down in the statue. At the time the application for complaint was argued there were two vacancies on this commission. Only three members heard the argument. One of these members is strongly of the opinion that we should proceed to formal hearing. He does not think all the facts necessary to the determination of the question are now before the commission. While it is true that the remaining two commissioners who

heard the argument are against proceeding further, yet they base their opinions on totally different grounds. The third member of the commission whose vote is necessary for dismissal, has totally different reasons from those given by another member of the commission who was present at the argument and who now votes for dismissal. A development of such a wide difference of opinion not only between those who favor dismissal on one hand, and those who oppose it on the other, but also a wide difference of opinion among those who vote to dismiss emphasizes the importance of obtaining further light before we put this case beyond the reach of the commission. I not only object to the dismissal of the application at this stage, but I object even more strongly to the refusal of the commission to allow a reargument before the entire commission, so that each of its five members may have the benefit of oral argument which is universally deemed to be helpful if not necessary in the decision of cases involving intricate questions of fact and law.

"In view of the importance and newness of the question involved and the vast interest which will be affected, and in view of the diversity of opinion among members of the commission, I am unwilling to close the door to further consideration of this application. This commission should not in my opinion take final action or make any deliverance in this matter without further effort in the manner indicated to reach that unity of reasoning which alone would give the opinion of this commission that weight which it should carry and make the proper and expected contribution to the solution of the vexed question involved in this application."

Commissioner Thompson, the other dissenting member, said in his conclusion:

"In my opinion, from the data and reasoning presenting, a prima facie case of an unfair method of competition in commerce has been made out sufficient upon which to issue a formal complaint. It may very possibly be that when the disputed claims have been subjected to the test of evidence and cross-examination of witnesses, with a formal hearing before the commission, that the prima facie case presented will fail. Thus far, there has been an exparte investigation. It is true that this has been supplemented by extensive oral argument before the commission. Undoubtedly the commission has all before it that can be obtained from such examination and argument. There are, however, many essential matters in dispute such, as for example, whether the Duluth and Birmingham districts can or are supplying more than the needs of their respective communities, or whether steel is made cheaper in Duluth than in Pittsburgh, and many other facts which can only be obtained through a formal hearing, all of which the commission should know to determine whether the law of supply and demand is functioning without artificial restriction. I, therefore, dissent from the majority opinion of the commission on the ground that there has been enough data presented to the commission upon which it may have a reason to believe that a complaint should issue in the interests of the public, and I further dissent from the action of the commission in dismissing the complaint and issuing a public statement, on the ground that there are many facts necessary before it can properly determine whether to dismiss a matter of so great interest to the public and before it can give forth an authoritative statement as to why it dismisses the application."

Emphasize Waterway Needs at Detroit Meeting

Claiming that business, industry and agriculture are seriously handicapped by lack of rail transportation while a natural waterway lays undeveloped, members of the Great Lakes Tidewater congress met in Detroit July 22-24. In numerous addresses and communications presented at the meeting, it was stated that the Mississippi valley and the west are producing the major portion of the nation's wheat supply but are commercially disabled due to the inability to ship their product.

Herbert Hoover sent a message which said in part:

"In the years to come the country will find that proper outlet for the bulk of its commodities will lie by water rather than rail. We need a national study and a national program of transportation development and such a program will embrace not only improvement of interior waterways but development of the St. Lawrence.

"That the ports of the Great Lakes can be put effectively on seaboard with a comparatively moderate expenditure is unquestioned, and such a step will improve enormously the prosperity of fifteen states, decrease cost of distributing commodities and increase returns to the producer."

Rail Situation Unchanged

Youngstown, O., July 26.—Operations of valley steelmakers continue at an extremely low point due almost entirely to the inadequacy of transportation facilities. Inquiries, particularly for semifinished materials, arrive in quantities but receive little encouragement from the producers. Behind in deliveries on nearly all products, the makers are unwilling to book additional orders. As to such deliveries as the mills are able to make, one sales manager says his company has quit making sales and is now making allotments. Prices in all departments, except wire products, remain unchanged from the level prevailing the past few weeks.

James W. Powers, formerly with the Jaxson Steel Products Co., Jackson, Mich., has been appointed sales manager of the Motor Starter & Air Pump Co., Newark, N. J., with offices in the Book building, Detroit.

Traffic Men To Ask for Better Car Supply

Youngstown, O., July 26.—Traffic officials of the valley steel companies are expecting to go to Washington again this week, together with officials of other steelmakers, further to plead the cause of a better car supply. Having won recently the modification of general order No. 7 by which open top cars with sides under 36 inches may be used for carrying steel and iron, but finding relief under the ruling far from adequate, the traffic men now are to urge exemption of all open top cars with sides up to 40 inches.

This will further release 15,000 open tops, it is pointed out. While all of these will not find their way to steel mills, they will afford some additional relief to the industry, perhaps sufficient to enable operations to be continued at a point at which overhead costs can be met. It is claimed by some of the producers that operations now are largely on orders by which production is at less expense than would be actual shutdowns.

Even the supply of box cars is being reduced. This is due chiefly to the fact other industries using open tops have been forced to use boxes because all fuel cars with sides over 36 inches now are diverted to the coal industry. One of the departments of the steel industry which seems better supplied with cars in the past week than in many weeks, is that of scrap dealing. The number of cars loaded with scrap iron and steel has increased materially since the modification was made.

The ruling of the interstate commerce commission sending 4000 cars of coal daily to the Northwest is expected further to handicap the steel industry is that the more or less adequate supply of locomotive power now is to be utilized further in hauling this traffic to lake ports and returning the empties to the mines.

Relief on this and other points will be sought at Washington. At a meeting in Pittsburgh last week steel traffic men and railroad officials agreed on the plan of action and this has been sent to the commerce commission by Daniel Willard, chairman of the railroads' committee. Date for the appearance of the steel men in Washington yet is to be selected.

The complaint of the B. F. Sturtevant Co., Boston, against the New Haven railroad, alleging that its rates on iron and steel castings and tubing between Framingham and Readville, Mass., were too high in the period of government control of the railroads, is not sound, an examiner for the commission has reported.

British Billets Selling Lower

American Competition in Semifinished Material Made More Difficult as Prices Decline—Wire Rods Still Salable at $106.12—Pig Iron Market Tighter —Demand from United States for Ferromanganese Falls Off

The Iron Trade Review Staff Cable

European Headquarters,
THE IRON TRADE REVIEW,
2-4 Caxton House, Westminster, S. W. 1

Sterling—$3.79

LONDON, July 27.—Lower prices of British billets are serving to shut off competition in semifinished material from the United States. Wire rods from the United States are saleable in the British market at £28, ($106.12) c.i.f. British beams and plates are firmer, while the position of the pig iron market is tighter.

The tendency in the French market is easier, and Belgian conditions continue to progress toward normal. Pig iron production in Belgium in June amounted to 92,000 tons, while the output of steel was 99,000 tons. Shortage of coke in Austria is severe, the largest producer of pig iron having been forced to bank its blast furnaces. Germans complain that they are not getting iron ore from France.

British consumers are paying premiums for pig iron, Blast furnace workmen on the west coast are agitating for an increase in wages. Freight rates from Bilbao have been reduced 21 shillings ($3.98), making the current price of Rubio ore 53s ($10.04) c.i.f, Middlesborough.

There is less of a demand from the United States for ferromanganese, and the export price is £55 ($208.45). Tin plate for delivery in the fall is being booked at a price of £2 19s ($11.18).

Britain Unable To Fill Foreign Demands

European Staff Correspondence

Sterling—$3.96

MIDDLESBROUGH, Eng., July 8.—The export market for iron and steel from the northeast coast of England is a continuous record of disappointment. There is a demand from oversea customers which cannot be met by home manufacturers owing to the absorption of the entire British output by domestic buyers. Production of iron before the war enabled vast quantities of pig iron to be exported. Now the output is insufficient to provide for needs of British shipyards and engineering firms. The changed methods now prevailing enable the pig iron produced at British furnaces to go through the continuous process necessary to turn it out as the finished product needed for the British market. Exports of pig iron consequently are infinitesimal. The total pig iron shipments from the port of Middlesborough for June, showing as they do an increase of 5300 tons of pig iron compared with May, might lead to the wrong conclusion that the iron and steel exports from the port were expanding instead of declining.

During June the quantity of pig iron exported reached 23,369 tons against 17,986 tons in May. The oversea deliveries of manufactured iron and finished steel in June totaled 18,992 tons while the figures for May were 20,780 tons.

Pig iron exports thus show a slight increase and steel a decrease. These totals do not include the coastwise shipments. It is fuily expected that the exports of steel for the ensuing months will show a still further decline.

These totals may suggest that the restrictive policy regarding exports agreed upon by British sellers was not being adhered to. The increase in iron tonnage exported is explained by the fact that old commitments have to be met. When these old contracts, which were entered into before the policy of restricting exports was adopted, are completed the effect on export tonnage will be most marked, unless British pig iron production becomes so great as to overtake the home demand. This does not appear likely. In fact, merchants are met with a blank refusal to quote when they seek to secure supplies for delivery overseas.

Deliveries to Overseas Customers

France obtained the second largest tonnage during June, taking 4005 tons of pig iron and 606 tons of steel, that total being about half the tonnage shipped to Belgium to whose order 8636 tons of pig iron were delivered, and 690 tons of steel. Italy secured 3740 tons of pig iron and 826 tons of steel. Germany also was a buyer to the extent of 1447 tons of pig iron. The shipments of iron and steel coastwise reached 36,817 tons, of which 32,790 tons were pig iron. The following gives the exports, in tons, from Middlesborough in June:

	Pig Iron	Finished Iron and Steel
Belgium	8636	690
British East Africa	....	14
Cape Colony	....	941
Ceylon	....	403
China	....	471
Denmark	....	802
Egypt	....	15
France	4005	606
Germany	1447	...
Holland	930	1163
Hong Kong	....	106
India	25	4314
Italy	3140	826
Japan	257	1439
Java	25	2044
Norway	....	311
Portuguese East Africa	....	3270
Sweden	1505	870
United States	1480	...

The entire tonnage exported from the port of Middlesborough for June reached 79,817. Of that total 36,817 were sent to coastwise destinations. Excluding the coastwise deliveries there was a larger volume of exports than for the first half of last year. In 1919, 95,185 tons of pig iron and 122,192 tons of manufactured iron and steel were delivered to oversea customers in the first six months, while for the first half of the present year the pig iron exported totaled 159,011 tons and the manufactured iron and steel exports 130,492. To how great an extent the present deliveries to foreign customers could be increased is instanced by the offers of up to 80 shillings ($15.84) per ton more for iron for export than is quoted for home delivery. Even were prewar deliveries possible sellers here would

Current Iron and Steel Prices of Europe

British Market

Corrected to Date by Cable

Domestic and Export. Gross Tons at Works

SEMIFINISHED STEEL

	£ s d	$
Billets soft steel	24 0 0	90.96
Sheet bars	25 0 0	94.75

FINISHED STEEL

Steel bars, England, ⅝ to 3 inch	32 0 0	121.28
Ship plates, England	25 10 0	96.65
Ship plates, Scotland	27 10 0	104.23
Beams, England	24 0 0	90.96
Beams, Scotland	27 0 0	102.33
Sheets, black, 24 gage	44 0 0	166.76
Sheets, galvanized, 24 gage	52 0 0	197.08
Rails, 60 lbs. and over	23 0 0	87.17
Tin plate, base box, 108 lbs.	3 3 0	11.94
Wire rods	35 0 0	132.65
Steel hoops	36 10 0	138.34

PIG IRON*

West Coast Hematite	14 15 0	55.90
Hematite, East Coast Mixed Numbers	13 0 0	49.27
Middlesbrough Basic	11 7 6	43.11
Middlesbrough No. 3	10 17 6	41.22
No. 3 Foundry, Derby, Leicester, Nottingham	13 2 6	49.74
No. 3 Foundry, Northamptonshire	12 0 0	45.48
No. 3 Foundry, Staffordshire	12 10 6	47.47
No. 3 Scotch Foundry	13 5 0	50.22
Ferromanganese, 80 per cent	37 0 0	140.23

*Pig iron quotations are f.o.b. furnace for delivery in the United Kingdom. Export prices generally are subject to free negotiation.

COKE

Yorkshire furnace	3 12 0	13.64
Yorkshire foundry	4 5 0	16.11

French Market

Prices Last Reported

PIG IRON

	Francs per metric ton (2205 lbs.)	$
Hematite, Lorraine	855 to 915	73.70 to 78.87
Foundry, Longwy, 3 per cent Si., sand-cast	600	51.72
Foundry, Longwy, 3 per cent Si., chill-cast	650	56.03
Foundry, Longwy, 2 per cent Si., sand-cast	597	51.46
Foundry, Longwy, 2 per cent Si., chill-cast	630	54.31

COKE

French furnace	245	21.12
German, Belgium and British furnace	270	23.27

SEMIFINISHED STEEL

Blooms	973 to 979	84.67 to 85.19
Billets	973 to 979	84.67 to 85.19
Sheet bars	1223 to 1259	105.42 to 108.53

FINISHED STEEL

	Francs per 100 kilos (220 lbs.)	$
Merchant bars	145	12.50
Angles	145	12.50
Normal beams and profiles	145	12.50
*Plates bridge and tank, 5 millimeters nad thicker	184½	15.90
*Sheets, black, 3 millimeters	192 to 199	16.55 to 17.15
Bars, cold-drawn, 40 to 60 millimeters round	220 to 260	18.96 to 22.41

Pig iron prices are f.o.b. furnace; semifinished steel prices f.o.b. works; finished steel prices, according to the schedule of the Paris Consortium of Iron and Steel dealers, delivered, except (*) which are from schedule of the Comptoir des Toles.

Belgian Market

Prices Last Reported

PIG IRON

	Francs per metric ton (2205 lbs.)	$
Foundry, 3 per cent silicon, Belgian	750 to 775	67.13 to 69.36
Foundry, 3 per cent silicon, Luxembourg	810	72.50
Basic, open-hearth, Belgian	775 to 800	69.36 to 71.60
Basic-bessemer, Belgian	750 to 800	67.13 to 71.60

SEMIFINISHED STEEL

Blooms	950	85.03
Billets	975	87.26
Sheet bars	1000 to 1050	89.50 to 93.98
Wire rods	1450	129.78
Standard rails*	1350	120.83

FINISHED MATERIAL

	Francs per 100 kilos (220 lbs.)	$
Merchant bars	130 to 135	11.64 to 12.08
Normal beams and profiles	135	12.08
Plates, 5 millimeter and thicker	155 to 160	13.87 to 14.32
Sheets, black, 3 millimeters	190	17.01
Sheets, galvanized, 3 millimeters	390 to 395	34.91 to 35.35
Plain wire	200	17.90

*Sold on same basis as semifinished material.
†Plus 50 francs for export.
All prices f.o.b. furnace or works, except finished material, for which delivered prices are quoted

only give deliveries against foreign credit with the greatest caution.

As indicated in last month's report, freights are falling. Taking advantage of this circumstance British merchants have speculated in oversea markets. In this country the shortage of production was due, it was asserted, to lack of the necessary raw material to meet the exigencies of the situation. American scrap steel to the extent of about 50,000 was secured by British merchants for the home market. This is now on offer. Before its arrival at British ports, however, the market quotation for this material dropped. British buyers are in consequence not eager for deliveries. In one instance an importer has 60 cars loaded ready for delivery. Despite the assertion that production was lessened owing to lack of material, the works will only take spasmodic delivery of a few carloads, just sufficient to keep things going. A further fall in prices is anticipated. There is said to be 15,000 tons of American scrap steel in the Clyde for which purchasers cannot be found. At least half a dozen British merchants are concerned in this American deal. Bought at £10 5s ($40.59) c.i.f. this material, it was anticipated would readily realize £11 ($43.56) per ton, delivered in the United Kingdom, so urgent was the reported need. Sellers are faced now with a falling market and may lose—the difference between the selling price, £9 ($35.64) at this time and the original cost.

The importation of foreign ore to the Tees river has been heavier than for May, when 159,621 tons of ore were imported. In June the total quantity imported was 207,497 tons. The freight from Bilbao to the Tees is 26 shillings ($5.15). Rubio ore is now quoted at 49 shillings ($8.33) for best quality, but business is quiet.

Steel Trade in Suspense; Buyers Holding Off

European Staff Correspondence

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation Street.

Sterling—$3.95

BIRMINGHAM, Eng., July 9.—Conditions in the iron and steel trades are uncertain, with no very clear indication as to immediate developments, but it is just a little easier for buyers to decide on their policy for the future. Whatever weakness exists is in the steel department, but among the decisive conditions the most important is the scarcity of pig iron. The steadily increasing steel output is intensifying this, as all steelworks are calling for more iron. How far this scarcity will help to maintain steel prices is doubtful.

Recent prices are well maintained, but in the Midlands it is considered somewhat significant that Staffordshire has not followed the example of

Derbyshire in advancing pig iron, while Northampton has not applied its advance to forge material. Middlesborough also has not changed its prices, although these are now substantially below both Midland and Scotch prices, while east coast hematite mixed numbers are well below the selling prices of west coast, Welsh and Scotch hematite, the former being £13 ($51.35) per ton, and the latter ranging between £14 ($55.30) and £14 15s ($58.25) per ton. In every district there is a great shortage, and as furnacemen's wages in Cleveland are to be advanced 25¼ per cent dating from July 4, this will help to support the market. The Cleveland Ironmasters' association announces that the ascertained price of No. 3 Cleveland pig iron for April, May and June was £10 3s 8d ($40.09) per ton, and wages are now 149.50 per cent above the normal standard.

The Middlesborough embargo on exports has not yet diverted sufficient pig iron to satisfy the home demand but this is partly due to the stoppage of two large furnaces at the Tees Bridge Iron Works for repairs. A number of large furnaces are approaching completion and some have already started, notably the new furnace at Ebbw Vale. South Wales is making more progress toward satisfying requirements than most other districts. The situation has been improved by increased supplies of coke to the furnaces, as the railway congestion becomes less acute.

Pig iron consumers still are placing orders wherever they can get them accepted. The pressure is not so acute for forge iron, owing to the excessive proportion of inferior material turned out from the furnaces due to the inferior grade of fuel and other disadvantages.

In consequence of the high price of the better grade of foundry irons, the founders producing rolls and other mill machinery have increased their prices £2 10s ($9.87), both for grain and chilled rolls, making the selling figures about three times more than they were before the war. The founders have had to face increased labor charges, as the molders, since their strike last autumn, have received an advance of 6 shillings ($1.18) per week. The foundries are congested with orders, pouring in not only from British iron and steel mills, but from those on the continent, where machinery is urgently wanted.

Business in the steel trade is largely suspended for the time being, makers and buyers having different ideas as to prices. The buyers are clamoring for reductions based on their expectations of increased production, while they are influenced to some extent by the prevailing talk of a pending business slump. The figures of American pig iron production, which are announced in England for the first time today in THE IRON TRADE REVIEW's cablegram, showing a fairly substantial increase over the first six months of 1919 encouraged buyers to claim lower prices.

Some consumers have bought billets at slightly easier prices, and Welsh tinned bars which were up to £30 ($118.50) are now obtainable at £25 ($98.75). On the other hand, some important steel manufacturers still decline to give quotations, while one merchant this week was quoted £27 ($106.65) for billets, a figure obviously intended to be prohibitive.

The quarterly meeting of the iron trade held at Birmingham July 8, yielded hardly any new business, and there was a significant absence of Welsh tin plate makers, which was quite in accordance with expectations. Wales is usually strongly represented, but in view of the recent fall in prices of tin plates, buyers will wait as long as possible before placing any more new buiness. The merchants who bought freely during the rising market can afford to maintain a waiting policy. The Welsh manufacturers have very good order books and are not in need of business for a time. The present stagnation probably will continue for some little time. A few nervous holders of stocks have been reselling, with the result that for prompt sales the selling figure is now 66 shillings ($13.03) per box, with 3 shillings (57 cents) or 4 shillings (78 cents) less for forward buiness. Galvanized sheets are a trifle cheaper than they were. Business has been done at £52 ($204.70) for corrugated galvanized sheets. The makers are keener for orders, owing to a serious falling off in overseas buying. Black sheets are now about £44 ($173.80) per ton.

Foreign competition is increasing. One Birmingham merchant this week purchased 80 tons of ½-inch steel bars at £23 5s ($91.84) at the port, and he expects to receive these at a total cost to himself of £25 ($98.70) by the time they reach his warehouse.

The finished iron market maintains its strength, wrought iron still being called for without much regard to price. Every merchant with iron to sell can command his price, while the manufacturers of South Staffordshire obtain premiums of £2 ($7.90) to £3 ($11.85) on list prices for bars hoops, iron and steel strip and skelps.

Production still is lagging, and a common estimate is that the few works which have been able to introduce a triple 8-hour shift in the iron trade obtain about the same production as they formerly got from the double shift.

Output of pig iron in June amounted to 726,000 tons, which is 13,000 tons less than in May, but represents a larger daily average. Production of steel ingots and castings totaled 845,000 tons, or 1000 tons less than in May. Of the pig iron produced in June, 266,000 tons were hematite; 260,000 tons, basic; 118,000 tons, foundry quality, and 50,000 tons, forge.

The following is a comparison of figures this year and last:

PIG IRON

	1919 tons	1920 tons
June	658,000	726,000
May	671,000	*739,000
First half	3,954,000	4,145,000

STEEL INGOTS AND CASTINGS

	1919 tons	1920 tons
June	631,000	845,000
May	755,000	*846,000
First half	4,264,000	4,877,000

*Highest monthly total since armistice.

Win Another Victory for Free Transportation

The large commercial interests of New York city last week scored another important victory in their fight for free transportation, when the citizen's transportation committee, organized by the merchants to operate an independent trucking system, obtained an injunction in the United States district court restraining the Old Dominion line, teamsters' unions, longshoremen, stablemen and their helpers, "from combining or conspiring together to prevent transportation between New York and Norfolk, of Samuel Beyer & Co."

The latter company has a plant in Norfolk to which it ships raw materials from New York and the finished materials at Norfolk in turn are shipped to New York. In view of the present railroad situation, this company is depending on the steamship company for transportation. Samuel Beyer & Co, employed the Citizens' Trucking Co, operated by the citizen's transportation committee to haul this merchandise to and from the piers Union employes of the Old Dominion Transportation Co. refused to accept merchandise of the Beyer company hauled by the Citizen's Trucking Co. and the manager of the steamship company also refused to receive the goods due to fear of difficulties with the unions.

Strike Report Favors Workers

Interchurch World Movement Denounces Policy of United States Steel Corp.; Charges Press Is Biased; Claims Radicalism Had No Part in Recent Steel Strike; Criticize Public Authorities

THAT the main issues of the steel strike of Sept. 22, 1919, to Jan. 7, 1920, were not settled, that the main causes remain and that both causes and issues remain uncomprehended by the nation, is the opening gun in a 94,000-word report just completed by the commission appointed last fall by the Interchurch World Movement to investigate industrial unrest and the steel strike in particular.

"In the months after the strike," the report says, "no effort was being made to settle the issues raised by the strike through reasoned public discussion of the basic facts. Employers and employes began to wait for 'the next strike'; they and the public wondered, careless rather than fearful, whether 'the next strike' would come in months or years, and whether it would be 'without violence,' as in 1919, or with guns and flame as at Homestead in 1892."

Assails Policy of Steel Company

That the interchurch commission violently is opposed to what it regards as the prevailing labor policy of the United States Steel Corp., becomes apparent upon the merest glance at the report. In fact, this is shown in a letter, signed by Dr. Daniel A. Poling, vice chairman and secretary of the commission, 45 West Eighteenth street, New York, issued with the report and which in part is as follows:

"This report goes into the history of the steel strike with the antecedent events and conditions leading up to it. It covers the period of the strike and indicates the causes which gave it strength, and the causes which ultimately brought about its defeat.

"Ample extracts from testimonies are included. Extended comment is made upon the way in which public authorities in the state of Pennsylvania related themselves to the opposing forces. Taken as a whole, the commission's report constitutes a serious indictment of the labor policy of the Steel corporation."

The report strongly favors the side of the strikers, as Dr. Poling states. He gives the personnel of the commission and tells of the importance which the commission attaches to its findings.

A surprising statement in the report is that "charges of bolshevism or of industrial radicalism in the conduct of the strike were without foundation." The commission calls for the adoption of the 8-hour day on all continuous processes. It desires a limitation of the day to not more than 10 hours, with not more than a 6-day and a 54-hour week. The commission suggests numerous ways by which labor unions can increase their efficiency and effectiveness and it advises organized labor to find a substitute for the closed shop.

Why Strike Failed

ACCORDING to the report of the Interchurch World Movement, the steel strike was defeated by:

1. The strike-breaking methods of the steel companies and their effective mobilization of public opinion against the strikers through the charges of radicalism, bolshevism and the closed shop, none of which were justified by the facts; and by the suppression of civil rights.
2. The hostility of the press, giving biased and colored news, and the silence of both press and pulpit on the actual question of justice involved; which attitudes of press and pulpit helped to break the strikers' morale.
3. Public fear of a general labor war due to the coincidence of the coal strike and threat of the railroad strike, together with labor's failure to formulate and explain its purposes with regard to public service.
4. The prevailing prejudice of the steel towns and in the general public mind against the foreigners who constituted the overwhelming numbers of the strikers.
5. The ineffective support given the strike by most of the 24 affiliated craft unions through which it was organized and by the American Federation of Labor.

The commission explains that its findings were obtained largely through personal observation and open hearings and that its most intensive effort was in the Pittsburgh district, including Johnstown and Youngstown, and was focused on the Steel corporation plants around Pittsburgh. Since 69,000 employes of the Steel corporation have a 12-hour working day, and since the number of those receiving the common labor or lowest rate is 70,000, it says, "this means that approximately 350,000 men, women and children are directly affected by the longest hours or the smallest pay in that part of the industry owned by the United States Steel Corp., which fixes pay and hours without conference with the labor force. Since this corporation controls about half the industry, it is therefore a reasonably conservative estimate that the working conditions of three quarters of a million of the nation's population have their lives determined arbitrarily by the 12-hour day or by the lowest pay in the steel industry."

Lists Grievances

The general summary of findings of the commission is as follows:

The fundamental grievances were found to be: Excessive hours; the "boss system"; no right to organize or representation.

The remedies desired were: Shorter day and week with a living wage; representation and conference, with an end to the "boss system" which so often subjects common labor to petty tyrannies; right to unionize and a substitution of industrial democracy for industrial autocracy.

These grievances were of long standing but had found no expression because they were limited largely to foreigners of many races and languages, without industrial tradition, education or leadership to organize; because race prejudice effectually kept the more skilled, the more intelligent and better paid American working men from taking up the cause of the foreign-speaking workmen; because labor unions have been accustomed to look upon the foreigner as an actual or potential strike breaker; and because the steel companies have most effectually deterred men from joining labor organizations.

These long standing grievances were brought to expression by the part these workingmen played in the war and the treatment afforded them for the sake of war production which gave them a new sense of worth and independence; by the fight for democracy and news of a larger workingmen's freedom in their native lands together with a growing sense of real Americanism which brought a spirit of democracy to their ranks; and by the decision of the American Federation of Labor to organize them and its actual work of organizing them into the various crafts unions.

We found that the strike was regularly conducted in orthodox fashion according to American Federation of Labor rules and principles; that while radicals sympathized with the strikers, as was natural, they were effectually debarred by the strike leaders and that far from having influence in it, and they often denounced and opposed those who conducted the strike.

The commission recommends that the press generally "free itself of the all

too well founded charges of bias, favoring capital as against labor"; that the pulpit be diligent to discharge its "legitimate, prophetic role as an advocate of justice, righteousness and humanity in all such conflicts of human interest as those involved in industrial strife." It condemns unsparingly "those authorities who suspended the right of free speech and peaceful assemblage before, during and after the steel strike." It recommends that the industrial department of the Interchurch World Movement and the social service commission of the Federal council of churches continue "this type of impartial investigation of industrial strife and unrest."

Claims Employers Exploited Foster

One whole chapter of the report is devoted to the formulation of a case to prove that reports of bolshevism and radicalism in connection with the strike were groundless. The only relation which William Z. Foster's book on syndicalism had to the strike, the commission says, is that copies of it were reprinted and distributed by the steel companies to influence public opinion. Neither this nor any other radical books were distributed among the strikers, says the commission, and it states that far from preaching radicalism, the strike leaders fought it. The strike was merely an old-fashioned one, the report says, and it describes the labor policy which it alleges as responsible for the feeling of dissatisfaction that led to the strike. The commission says that it repeatedly called on Judge Gary, and Homer D. Williams and E. J. Buffington, of the Carnegie and Illinois Steel companies, respectively, for proof of bolshevism among the strikers, and that no such proof was submitted. The report also criticizes Attorney General Palmer for encouraging a patriotic society's efforts in "running agitators out of Pennsylvania." The commission condemns "company spy" systems which, it says, furnish a medium for espionage that in most cases is relied upon for supplying labor information to the steel companies. Fear of this espionage is so great, the report says, that the commission had a great deal of trouble in getting steel workers to talk about their pay and the hours and conditions of work.

The annual earnings of 72 per cent of all iron and steel workers at the time of the strike were, and had been for years, below the level set by government experts as the minimum of comfort and also below the minimum of subsistence standard for families of five, the report states. It states that the popular impression that steel workers are highly paid is due to the publicity given the high wages enjoyed by certain skilled workers comprising less than 1 per cent of the employes. During 1918 the steel corporation's unskilled labor's average earnings were $1265, compared with the minimum of comfort level of $1760 and the minimum of subsistence level of $1386. In 1919 it was $1466, compared with a minimum of comfort level of $2024 and a minimum of subsistence level of $1575. In 1918 the average earnings of the unskilled workers were $1683 and in 1919 at the rate of $1952, the report says. It charges that extreme congestion and unsanitary living conditions prevalent in most Pennsylvania steel communities were largely due to underpayment of semiskilled and common labor.

Urges Government Intervention

The commission recommends that inasmuch as conditions in the iron and steel industry depend on the conditions holding good among the workers of the United States Steel Corp., and permanent solutions for the industry can only be reached by the Steel corporation in free co-operation with its employes, that the federal government be requested to initiate the immediate undertaking of the settlement of unredressed grievances by bringing both sides together. It recommends that the federal government, by presidential order or by congressional resolution, set up a commission representing both sides and the public, similar to the commission resulting from the coal strike and that such commission inaugurate immediate conferences between the Steel corporation and its employes for the elimination of the 12-hour day and the 7-day week and for the readjustment of wage rates; devise with both sides and establish an adequate plan of permanent free conference to regulate the conduct of the industry in the future, and continue and make nation-wide and exhaustive this inquiry into basic conditions in the industry.

Recommendations Included in Interchurch Report

1. The adoption of the 8-hour shift on all continuous processes.

2. Limiting of the day to not more than 10 hours on duty, with not more than a 6-day and a 54-hour week, with at least a minimum comfort wage.

3. Recognition of right to join regular craft unions or any other freely chosen form of labor organization; recognition of right to open conference; either through shop committees or union representatives; recognition of right of collective bargaining.

4. A vast extension of house building—by the communities where possible, by the steel companies where community building is inadequate or impossible.

5. That organized labor:

Democratize and control the unions, especially in regard to the calling, conduct and settlement of strikes.

Recognize unions with a view of sharing in responsibility for production and in control of production processes; to this end repudiating restriction of production as a doctrine, formulating contracts which can be lived up to and finding a substitute for the closed shop wherever it is a union practice.

Scrupulously avoid all advocates of violence.

Accept all possible proffers of publicity and conciliation.

Promote Americanization in all possible ways and insist upon an American standard of living for all workingmen.

Prepare more adequate technical information for the public in regard to all conditions bearing upon the calling and the conduct of a strike.

Seek alliance and council from the salaried class known as brain workers.

6. That the President's industrial conference plan for standing tribunals of conciliation and publicity be given a fair trial. We believe that the most effective step to be taken for the obtaining of justice in a strike situation is through publicity, conciliation and a voluntary system of arbitration.

7. That minimum wage commissions be established and laws enacted providing for an American standard of living through the labor of the natural breadwinner permitting the mother to keep up a good home and the children to obtain at least a high school education.

8. That the federal government investigate the relations of the federal authorities to private corporations, "under-cover" men and to labor detective agencies.

9. That the 8-hour day be accepted by labor, capital and the press as the immediate goal for the working day and that government provide against working days that bring over-fatigue and deprive the individual, his home and his community of that minimum of time which gives him an opportunity to discharge all his obligations as a social being in a democratic society.

Fig. 1—Heat treating department showing heating and carburizing furnaces and oil quenching tanks

Builds Forge Shop in Pittsburgh

Duff Mfg. Co Erects New Plant To Make Forgings for Own Use and for Domestic Trade—Modern Heat Treating and Die Making Departments Facilitate Operation—Output 800 Tons Monthly

DURING the last two or three years companies depending on outside sources for their supply of drop forgings have experienced difficulty in obtaining enough forgings to meet current needs. This was particularly true of the Duff Mfg. Co., Pittsburgh, which has been engaged in the manufacture of lifting jacks and trench braces since 1883. Requiring a large tonnage of drop forgings yearly for its particular line of products and being unable to purchase anywhere near the tonnage required to maintain production satisfactorily, officials of the Duff company laid down its own drop forge plant. In doing so, the company not only made provisions for taking care of its own requirements but also installed additional hammers and equipment to become an active factor in the drop forge trade as far as the Pittsburgh district is concerned. Although only entering the field during the first quarter of this year, the company now is producing 800 tons of drop forgings monthly for the domestic trade. These forgings are made of nickel, nickel-chrome or carbon steel and are used for making automobile, tractor, railroad car and machine tool parts.

Plant buildings include an office, forge shop, in which the hammer and the heat treating departments are located, machine shop, metallurgical and chemical laboratory, and power plant. They are substantially built of brick, steel, glass and concrete and are provided with floors built of either brick or concrete. Special attention has been given to the ventilation and lighting.

The sales, advertising, accounting, and engineering departments, and a modern emergency hospital are housed in the general office building. In connection with the engineering work, an experimental department is operated, in which eight workmen are engaged in constructing and testing experimental models of new products. The emergency hospital is in charge of a competent nurse and is equipped with the necessary appliances and remedies needed to take care of patients until the proper medical or surgical attention can be provided.

FIG. 2—TEMPERATURE AT FRONT AND BACK OF EACH FURNACE IS AUTOMATICALLY RECORDED

All raw material is received in railroad cars, and before it is unloaded samples are taken and tested in the plant's laboratory. If found defective, the shipment is rejected; otherwise it is unloaded by the monorail crane shown in Fig. 5 and stored in the yard. The monorail crane was built by the Euclid Crane & Hoist Co., Euclid, O. From the storage yard, the material is moved by the crane to the shears, as required. As the individual pieces are cut by the shears they fall into a steel box placed on a skid. The skids are so designed that they may be raised from the floor by means of an electric lifting truck; and the skids and their load are then moved by the truck to the hammers.

If the forgings are to be cold-trimmed, they are dropped, after the forging operation is finished, into a similar box placed similarly upon another skid and moved to the trimming press, from where they are taken to the heat treating department. If they are to be hot-

trimmed, which usually is the case, they are trimmed by the hammersmith and then dropped into one of the boxes, after which they are transported directly to the heat treating department. They then are given the proper heat treatment, cleaned by sand blasting or pickling, inspected, and either loaded on a car for shipment by the monorail crane; or, if they are to enter into parts manufactured by the company itself, moved to the machine shop by an electric truck.

The sides of the forge shop are made of glass windows and sliding doors, and, when these are open, the plant is ideally ventilated by the cool breezes from the Ohio river. About 140 men are employed in the forge department. Each hammer is so placed that when repairs are necessary, they can be made without confusion. In order to facilitate production, large aisles are provided. All work is kept moving in one direction only. In this way, congestion is avoided and the transportation charges are reduced to a minimum. The equipment consists of 14 steam hammers which were built by the Erie Foundry Co., Erie, Pa., and range from 400 to 5000 pounds; a 1600 and a 2000-pound board hammer built by the Billings & Spencer Co., Hartford, Conn.; a 100-pound hammer, built by C. C. Bradley & Son, Inc., Syracuse, N. Y.; a 2-inch and 4-inch upsetter; a complete set of trimming presses built by the Toledo Machine & Tool Co., Toledo, O.; and a 42-inch barrel type sand blasting machine, tumbling mills, and pickling cans built by the Hoevel Mfg. Corp., Jersey City, N. J. The presses and Bradley-type hammer are driven by individual motors, while the board hammers and upsetters are driven by belting from overhead shafting, the group drive system being employed. The heating furnaces have all been designed and built by the company's own men. They are arranged to burn either oil or gas.

FIG. 3—MAIN AISLE IN DROP FORGE DEPARTMENT SHOWING CONVENIENT ARRANGEMENT OF HEATING FURNACES AND HAMMERS

The arrangement of the hammer, furnace and press for each set is such that no steps are lost as the work passes through the various stages. The stock is received by the heater, in a tote box direct from the shears, who places it in the furnace. When the proper temperature has been reached, the heater sets the stock on a stand convenient to both himself and the hammerman. The latter picks it up, performs the forging and trimming operations and then drops it in another tote box conveniently placed. A novel installation in this plant is the 4-inch air pipe at each hammer, from which a continuous stream of cool air is blown upon the hammerman as he forges the stock. In order that the larger work forged in the shop may be handled expediently between the hammers, furnaces and presses and from one part of the shop to the other, a monorail passes around the forge shop through the shipping yard, to the die-sinking room, and to the machine shop so that large work may be conveniently transported to any part of the plant.

FIG. 4—A MODERN CHEMICAL AND PHYSICAL TESTING LABORATORY IS OPERATED IN CONJUNCTION WITH THE DROP FORGE DEPARTMENT

Dies are moved from the die department to the hammers, or from the hammers to the die storage room by its use. A concrete tunnel that connects with the power plant passes under the center aisle. All the steam, oil, and air pipes for the plant are located in this tunnel. The forgings are carefully inspected before leaving the hammer department, the defective ones being discarded at this stage, thus eliminating further expense upon the worthless forgings. In the inspection operation, about one out of 10 forgings selected at random are carefully examined, for it is believed that when 10 per cent, selected in this manner, prove to be acceptable that the balance also will be correctly made. If, however, they

should fail to pass the initial inspection, a more thorough examination is made.

The heat treating department includes nine furnaces, which were designed and constructed by the company's metallurgist. They are all covered with a layer of insulated brick which were supplied by the Celite Products Co., New York, and the Armstrong Cork & Insulation Co., Pittsburgh. Each of these furnaces is equipped with two thermocouples, one in the rear and one in the front of each furnace. These thermocouples are connected to a recording potentiometer shown in Fig. 2, which records simultaneously the temperatures in the front and rear of each furnace. As the records show identical temperatures for both ends of the furnaces, it is to be assumed that they have a uniform temperature throughout. The potentiometer with portable leads, which forms part of the laboratory equipment, is used to check daily the readings of the recording instrument in the shop.

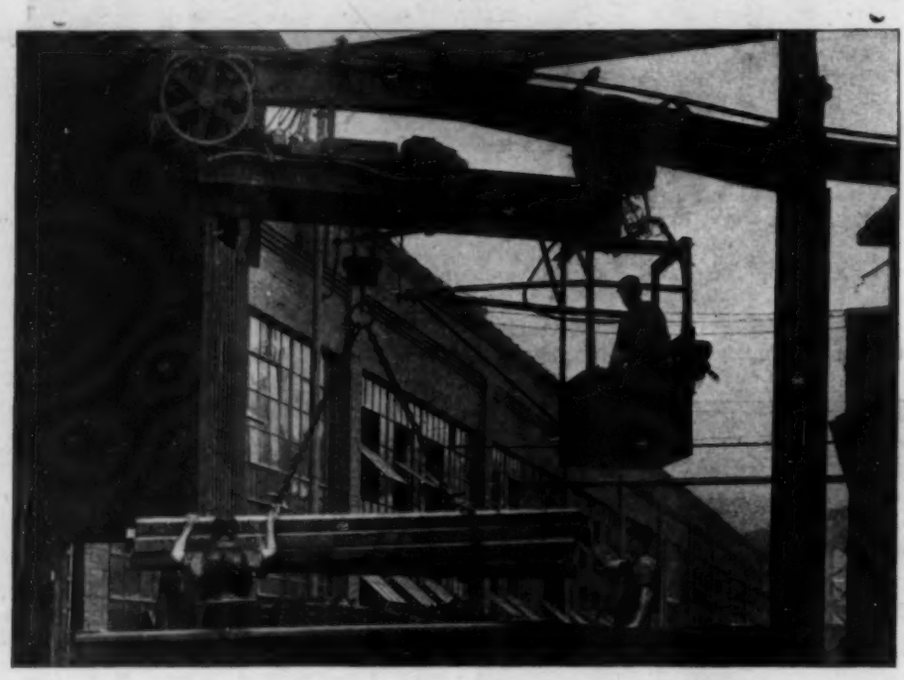


FIG. 5—FORGING BARS ARE UNLOADED FROM CARS BY MONORAIL CRANES AND EITHER STOCKED OR DISTRIBUTED TO THE DROP FORGE DEPARTMENT

All the usual heat treating operations generally performed upon carbon and alloy steels are done in this department. The furnaces are arranged in groups for quenching, drawing, annealing and carbonizing, as shown in Fig. 1. The quenching and drawing furnaces are placed along side of each other because these operations are closely associated, the drawing operation following the quenching.

Close to the quenching furnaces are located one 6 x 6-foot water tank and two 4 x 5-foot oil tanks. Fresh water is supplied constantly to the water tank through a 2-inch pipe centrally located in the tank and at a distance from the bottom of the tank equal to about half its depth. An adjustable overflow pipe is provided, which may be set so that the water in the tank will be maintained at any desired height. A steam pipe also is connected with the tank for use in cold weather when it is frequently found necessary to raise the temperature of the bath. The oil is kept cool by drawing the hot oil off the top of the tanks, by the use of a small motor-driven pump and through a coil of pipe located in the water tank. The oil is returned through the pipes that enter at the bottoms of these tanks. It is planned to install another water tank 5 feet in diameter and 15 feet deep. This tank will be used for quenching axles, and other parts for which the smaller tank is not adapted. The temperature of the water and oil tanks is tested at frequent intervals by thermometers.

The machine shop is a well lighted and ventilated modern brick structure. It is kept warm in winter by the exhaust steam from the power plant. Overhead are mounted the line and countershafts which drive the various machines in the shop. The group system of driving is employed, each group being driven by an individual motor. In this shop is found standard equipment of about 300 modern machines, consisting of lathes, planers, shapers, milling machines, presses, gear cutters, automatic screw machines, and special machines. The various units are grouped on each side of a large central aisle, through which operates a 10-ton Shaw-type electric crane, built by Manning, Maxwell & Moore, Inc., New York. Located in the center of each wing of the building is a monorail on which a 5-ton Shaw-type crane and a 5-ton Euclid-type crane operate. The monorails are arranged so that the cranes can pass from them to a monorail suspended from the 10-ton crane located in the main aisle, or to other monorails located in the forge shop and storage yard. In addition to the cranes, a system of electric trucks and platforms are provided by means of which small parts may be transported to any part of the building. On one side of the shop a space is reserved for a tool room in which the tools for the plant are made. Here are made the jigs and fixtures, designed by the engineering department, and used to produce the parts entering into the product of the company. Here, too, are made a standard line of cutting, shaping, and combination dies for use in their own plant and a large number of special and standard milling cutters.

The die-sinking department is located in the machine shop but is directly connected to the forge shop by the large main aisle, through which the monorail crane operates. A portable crane is used for handling the materials used in this room. The equipment consists of three Pratt & Whitney, and one Jackson die-sinking machines, one of the Pratt & Whitney machines being equipped with a cherrying attachment; one Becker vertical milling machine; one Niles-Bement-Pond vertical boring mill; two modern engine lathes, two planers; and five shapers. These machines are all belt-driven from a central shaft located overhead and driven by an individual motor.

The die shop is well lighted and well ventilated and is equipped with a standard bench extending the entire length of the room and located in front of the windows. About 20 diemakers are engaged in this department, designing and building the dies that are used to forge the forgings made by the company. Nickel-chrome die blocks made by the Sizer Forge Co., Buffalo, and Heppenstall Forge & Knife Co., Pittsburgh, are used. The dies, when finished, are carefully numbered and indexed. They are kept in a special die storage room when not in use. One man is assigned to this room and it is his duty to take care of the dies. After the dies come from the hammers, they are cleaned and carefully examined. If found in good order they are put away otherwise they are set to one side until the necessary repairs can be made. A small monorail system that carries a differential chain block is installed in the storage room for the handling of the dies.

As is the practice in modern plants,

(*Concluded on page* 317)

New Era Dawns in Ore Industry

Future of Lake Superior District Depending on Results of Present Attempts to Utilize Immense Tonnages of Low-grade Ore—Competition Threatening to Dethrone Great Ranges, as Best Material Is Exhausted—Influence on Furnace Practice

BY EDWARD W. DAVIS

IN THE past, a very large proportion of the iron ore used in the United States and in the world has been secured from the Lake Superior iron mining district. Production has been at an enormous rate, and the question naturally arises as to how much longer this district can continue to supply the demand. A study of the situation brings out the encouraging fact that the district can continue to produce immense tonnages of iron ore for many centuries by utilizing its low-grade ore material. In a broad sense, low-grade ores may be said to include all material containing too small an amount of iron and too large amounts of nonferrous minerals to be considered merchantable as mined. In addition to this, low-grade ore may also include material of acceptable iron content, but of such physical structure that it can not be used in the blast furnace. For the purpose of discussion, low-grade iron ore may be considered as iron-bearing material that does not meet the present demands of the blast furnace operators and cannot, therefore, be sold as mined.

This general classification contains all nonmerchantable ores and may be divided into several subdivisions. On the basis of iron content, they may be classified as follows:

1. Ores containing less than 40 per cent natural iron.
2. Ores containing between 40 and 50 per cent natural iron that are used to some extent at the present time as concentrating ores, or are mixed with ores of high iron content in order to increase the tonnage.
3. Ores containing over 50 per cent natural iron that are not in proper physical condition for blast furnace use.

In the first classification will be found the largest portion of low-grade ore material in the Lake Superior district. A much smaller amount of material will be found in the second classification and, comparatively, a very small amount of ore may be classified under the third division.

The total amount of low-grade ore in the Lake Superior district is enormous. It has been variously estimated by ambitious geologists at from 30,000,000,000 tons to "enough to last the world 1000 years." No matter upon what basis the question is considered, it is evident that there is a sufficient amount of low-grade ore in the district to warrant a detailed study as to methods of utilization, and if methods of treatment can be developed by which this material may be utilized, a sufficient amount of ore is available to supply the demand for many generations.

Look for New Sources of Supply

Unfortunately, so little interest has been manifested in connection with this low-grade material, that much of the information regarding tonnage and quality that might now be available, has been lost. Thousands of feet of drill core have been thrown away, leaving no record other than the drillers' notation, "taconite." If all of these cores had been saved, tests could be made on them which would furnish priceless information for future guidance. The practice of destroying drill cores, especially if they show any evidence of the iron formation, should be discontinued.

It is, of course, recognized by everyone, that at some future date all of the merchantable ore will have been removed from the district. This date is placed by various estimators at from 15 to 30 years hence. This statement is based on the assumption that the present rate of shipment will continue until the end of the season of the last year. This, of course, can not be the case. The history of any successful mining district shows that during the first few years of life small tonnages of high-grade material are mined. As time passes and a district is more largely exploited, the tonnage mined each year increases. As the tonnage increases, the grade of the ore usually becomes lower. After a certain time, the yearly production of the district reaches a maximum and after the maximum is passed, the production gradually decreases. The rate of decrease in production is quite rapid at first, but absolute depletion of the district may not occur for a great many years. The history of the Lake Superior district will, undoubtedly, follow in a general way the history of most mining districts, and it is to be expected that some day, past or future, the district has reached, or will reach, the peak of its production. After the peak is passed, and it becomes generally recognized that the district is on a decline, the descent toward absolute depletion will be quite rapid.

The distribution of the Lake Superior ores among the various furnace companies shows that, while some companies have a sufficient supply of ore to last them 30 or 40 years, other companies have enough to last only five or six years. These companies are already looking about for new sources of ore supply, and if they are not to be found in the Lake Superior district the companies will go elsewhere. Serious attempts are already being made to bring the Cuban and South American ores into competition with the Lake Superior ores, and undoubtedly the furnace companies that are expecting a shortage of ores will be only too glad to aid in the exploitation of new mining districts. When serious competition once starts against the Lake Superior district, production will decline rapidly. When this decline is generally recognized, it will not be as easy a matter to get new railroad equipment, new lake carriers, or new ore docks, as it has been in the past, and investors, realizing that the life of the district is limited to a few years, will hesitate to contribute more capital. This in turn will tend to reduce production further and to hasten the extinction of the district. It is a well-known fact that a mining district, once started on the down grade, gains impetus rapidly.

Summing up the whole situation, it appears that very serious competition might exist at the present time, if it were not for the fact that the Lake Superior district is in actual operation on an immense and efficient scale as compared with competing districts. In other words, the strength of the position in which the Lake Superior district finds itself lies in the fact that it is now actually producing sufficient ore to supply the demand. Quoting from a recent pub-

Abstract of Bulletin No. 7 of the University of Minnesota's school of mines experimental station, entitled "The Future of the Lake Superior District as an Iron Ore Producer."

lication by the Minnesota school of mines experiment station: "The wonderful transportation systems, ore handling and dockage equipment, organizations and capital of the Lake Superior district are now available and ready to assist in prolonging the life of the iron-ore industry. In this respect, the Lake Superior district has great advantage over many other mining regions, but capital is very mobile and railroads and docks can be allowed to deteriorate and as the future ore supply becomes more and more uncertain, this great advantage may gradually disappear."

Returning to the original question as to whether or not it will be necessary to utilize the low-grade ores of the Lake Superior district, it appears that it will not only be necessary to utilize these ores in order to maintain the production of the district, but it will be necessary to begin the utilization of them in the very near future. If the furnace companies that have only a few years' supply of ore available are allowed to invest large amounts of capital in developing and bringing into production new mining districts, the Lake Superior region will immediately start on its decline. If, on the other hand, these furnace companies find that the low-grade ores can be utilized, the fact that the Lake Superior district is already in large production and is so well equipped to handle immense tonnages will cause them to contemplate seriously investing new capital in this district for the purpose of developing the low-grade iron ores. The development of such an industry on a large scale will extend the life of the district into the far distant future.

Having arrived at the conclusions that the Lake Superior region has an almost inexhaustible supply of low-grade iron ore, that the utilization of this material is essential in order to maintain the production of the district, and that now is the time to start this low-grade iron-ore industry, the next logical question is, by what means may these low-grade ores be made useful.

Making Low-Grade Ores Merchantable

There are, in general, two factors that may make the utilization of the low-grade iron ores possible. These may be summed up as follows: First, a relative increase in the selling price of iron and steel, which will cause a readjustment in the schedule of iron-ore prices as determined by the Ore Buyers' association, and second, a decrease in the present cost of producing iron and steel from these low-grade ores.

The possibilities offered by the first consideration seem to be slight. Any relative increase in iron and steel prices may come about only from an increase in demand that can not be met by smelting only the so-called merchantable ores of the present time. Such a condition would make possible the utilization of a certain proportion of low-grade material. It must be remembered, however, that these conditions would bring several other iron-mining districts into strong competition with the Lake Superior region, and this district would receive only a portion of the benefit of the increase in price. For this reason, the holding of all the low-grade ore material as reserves of future shipping ore would eventually bring this material into such strong competition with ore from other districts that the Lake Superior low-grade deposits would probably never be utilized to any great extent. It seems, therefore, that the utilization of the Lake Superior low-grade ores through an increased demand caused by depletion of high-grade ores, thereby producing a readjustment in the iron-ore prices, should not be counted upon to make possible the utilization of the vast amount of low-grade material in this district.

The second possibility, namely, a decrease in the present cost of producing iron and steel from this low-grade ore material, should receive very serious consideration. In order to discuss this question intelligently, it is advisable to inquire into the present cost of producing iron in a blast furnace from low-grade ores.

In a report recently made by J. R. Finlay to the director of the United States bureau of mines, considerable information is given which bears directly upon this subject. In considering the figures that appear in the report, deductions can be made, showing that for every increase of one unit of silica in the ore, the cost of producing a ton of pig iron, exclusive of the cost of the ore, increases about 20 cents. Therefore, if two tons of ore are required to make one ton of pig iron, the addition of one unit of silica to the ore increases the cost of smelting by about 10 cents per ton. The freight on this additional one unit of silica is about 2 cents, and therefore the addition of one unit of silica to iron ore before shipment decreases its real worth by about 12 cents per ton. In a similar manner, it may be shown that the addition of 1 per cent moisture decreases the real worth of the ore by 2 cents per ton.

Certain modifications of these figures would be necessary in order to make them represent present conditions. Whether or not the figures are exact, they give a fair basis on which to judge of the economic importance of removing the silica from low-grade ores before shipment. In order to produce a maximum increase in the real value of the ore, the silica should be removed before shipment, up to a point where its removal costs 12 cents per unit. Above this point, the silica can be removed more cheaply in the blast furnace. If the silica content of an ore can be reduced before shipment from 18 per cent to 8 per cent by mechanical means, one ton of the ore can be shipped and made into pig iron at a saving of $1.20. If these 10 units of silica can be removed from the ore mechanically at a total cost that is less than $1.20 per ton, the ore should be treated and the silica removed before shipment.

Four Processes Available

It is then evident that before these low-grade ores should be smelted in a blast furnace, a large amount of the silica and moisture which they contain should be removed mechanically. This, and this only, will make possible the production of iron and steel at a price that will allow these ores to compete with the present grade of merchantable ores. Any reduction in freight rates or handling costs, or any improvement in iron and steel metallurgy will have the effect of raising the allowed limit of silica and moisture that shipping ores may contain, but it is difficult to conceive of any immediate improvement in smelting methods that will make possible a removal of a very large amount of silica from the ores by metallurgical means more cheaply than by mechanical means.

A study of the methods that can cope with the problem of handling thousands of tons of hard iron ore daily at an extremely small operating and maintenance cost narrows the field, at the present time, to four processes. These may be classified under the heads of log-washing, table concentration, jigging, and magnetic concentration. Log-washing and table concentration, as originated in this district by the Oliver Iron Mining Co., are now in general use. Jigs are in use to a small extent, and the first plant in which magnetic concentration is to be attempted is now being built. Each of these four methods of treatment operate in connection with ores having certain definite characteristics which make them amenable to one or more of the concentration methods.

The last method of treatment to make its appearance in the Lake Su-

perior district is magnetic concentration. This method of beneficiating iron ores has been in use for many years in New York state and Canada and some foreign countries, but, until recently, it has not been used in this district. A brief consideration of the working principles upon which this process is based may be instructive.

One strange characteristic of magnetism is that it may be made to exist to any considerable extent in only a comparatively few materials. These are called ferromagnetic materials, and in this class may be placed the metals iron and nickel, and the minerals magnetite and franklynite. The iron oxide, magnetite, comes within this group and it is, therefore, a comparatively simple matter to remove the magnetite from an ore after it has been crushed sufficiently fine to free the particles of magnetite from the gangue.

Magnetic Method for Hematite

Unfortunately, however, a large proportion of the low-grade ore found in the Lake Superior district is not magnetite but hematite, which is an oxide of iron that is not ferromagnetic. Hematite, therefore, can not be easily concentrated magnetically. It is, however, possible to change hematite into magnetite by a very simple operation known as magnetic roasting. This process consists in heating the hematite to such a temperature and under such atmospheric conditions as will cause a small amount of the oxygen to be driven off. Pure magnetic oxide contains 72.4 per cent iron and 27.6 per cent oxygen, and pure hematite, the nonmagnetic oxide, contains 70 per cent iron and 30 per cent oxygen. It is, therefore, necessary to remove 11 per cent of the oxygen present in the hematite in order to change it into magnetic oxide. This would decrease the weight of the hematite by only 3.3 per cent. The process of magnetic roasting consists in heating the hematite ore to a temperature of from 400 to 600 degrees Cent., in the presence of a small amount of fuel such as fuel oil, soft coal, lignite, or possibly peat. The fuel produces reducing gases which remove the necessary amount of oxygen from the hematite and change it to the magnetic oxide. The process can be carried on in rotary kilns; and on a large scale in properly equipped plants, magnetic roasting can be accomplished rapidly and at a small cost. This roasting method of producing magnetic material from hematite is not at present in use to any great extent.

In considering magnetic concentration, as applied to the Lake Superior low-grade ores, there is a possibility of using this method of treatment in producing a merchantable product from the low-grade hematites, as well as from the magnetites. Since magnetic concentration can be carried on successfully with ore as coarse as 5-inch cubes and as small as the finest dust, it at once becomes apparent that this method of beneficiation is of great future importance and deserves considerable study.

Just as gravity concentrators are divided into several classes, depending upon the nature of the work, so magnetic concentrators take several different forms, in order to produce different results. Magnetic concentration has a great advantage over gravity concentration. This is due to the fact that the magnetic attraction can be easily varied between wide limits, while the attraction of gravitation always remains unchanged. This introduces a controllable variable into the process of magnetic concentration which is not found in gravity concentration, and which opens up many new possibilities.

When magnetism is applied to the separation of coarse material, the concentration process is usually carried on with the ore in a comparatively dry condition, and when applied to fine material carried on with the ore in a wet condition. The type of machine that is known as the drum cobber is generally used in the dry process. This machine is, in reality, a short belt conveyor, 6 or 8 feet in length, the head pulley of which is equipped on the inside with magnets. These magnets revolve with the pulley in one type of machine, and in the other type the magnets are held in a stationary position, allowing the surface of the pulley and the conveyor belt to revolve about them. The revolving magnet type of cobber is used to make separation of material from 5-inch to 2-inch cubes. The stationary magnet type of cobber is used in making separations on material from 2-inch to 28-mesh. Neither of these types of machines operate satisfactorily on ores containing any considerable amount of material which will pass a 28-mesh screen.

In operating the magnetic cobber the ore is evenly distributed over the surface of the conveyor belt near the tail pulley. It is then carried by the belt to the magnetic head pulley, where the nonmagnetic particles fall into one compartment beneath the machine, while the magnetic particles cling to the belt and are carried around to the under side of the drum and there fall into a separate compartment. The capacity of this type of machine is large, varying from 10 to 30 tons per hour depending upon the size of the particles and the nature of the separation desired. The belt is ordinarily 30 inches wide and travels at a speed of 200 feet per minute. The operating cost, as well as the first cost of this machine is very small and it is admirably adapted to the treatment of large quantities of hard rocky material. By adjusting the strength of the magnets, material of nearly any desired iron content may be separated from the rest of the ore.

While material finer than 28-mesh can not be satisfactorily treated on the drum cobber, there are several types of machines, however, that make a very efficient separation of magnetite ores which are crushed to 28-mesh or finer. The finer the ore is crushed, the better is the separation that can be made by the use of these machines. Several of these concentrators for finely pulverized ores take the form of magnetic drums, more or less completely submerged in water. Probably the machine of this class best known in the Lake Superior district is the one which has been called the magnetic log-washer. This machine, designed, built, and tested in the laboratories of the Minnesota school of mines experiment station, is similar to an ordinary log-washer in construction with the exception that to the bottom of the tank of the washer is attached a series of magnets. These magnets tend to hold the magnetic material to the bottom of the trough, where the action of the logs forces the settled ore up the slope and delivers it as a clean concentrate, while the nonmagnetic material is kept in agitation and is washed over the rear end of the machine as tailing. This machine is very simple and cheap to operate, and the wear on the logs is much less than in ordinary log-washers, due to the fineness of the particles of ore which are treated.

Agglomerated Product Valuable

There is available, then, simple, satisfactory apparatus of large capacity suitable for the concentration of magnetic ores. If a separation can be effected at some coarse size, no further treatment of the concentrate is necessary. If, however, it is necessary to crush the ore to some size finer than 28-mesh, the concentrate is usually produced wet and must be dewatered and agglomerated before it becomes desirable furnace product. The dewatering can be effected simply and rapidly by means of the continuous rotary filters. The product

of these filters contains the amount of moisture necessary for agglomerating treatment which may be carried out by sintering, nodulizing, or briquetting. These processes of agglomerating are already in use by many of the furnace companies, in connection with the utilization of the flue dust which is made in the blast furnace. This agglomerated product is rapidly becoming recognized by the furnace operators as being far superior in structure to the majority of raw ore.

The Eastern Mesabi Venture

The whole process of magnetic concentration as applied to the eastern Mesabi magnetites is a good illustration of the manner in which the various types of machines can be made to work together so as to produce a high-grade furnace product from an ore material containing only 25 per cent of iron in the form of magnetite. The hard rock is first crushed to about 3-inch size and is then passed over a magnetic cobber. The field strength of this cobber is so adjusted that all of the coarse material containing no magnetic iron is discarded as tailing. The concentrate from this cobber is still too low grade to be useful, and is, therefore, crushed again to 2-inch size. This material is passed over a second cobber and the worthless gangue again discarded. This process of crushing, cobbing, and discarding worthless material continues until the product has been reduced to about ¼-inch size. When this stage has been reached, approximately one-half the ore has been discarded as tailing and the other half contains practically all of the magnetic oxide that was originally present in the rock. This ¼-inch material, however, still contains too much gangue to be considered a desirable furnace product. It is, therefore, crushed wet in ball mills until it will all pass a 100-mesh screen. This fine material is concentrated by magnetic log-washers in which the final separation is made. The concentrate produced by these machines is then dewatered by the use of continuous filters in the tank of which the fuel for sintering is mixed. The filter cake is conveyed directly to the sintering plant, where the ore is agglomerated. After being sintered the ore is screened in order to remove any fine material, and only the clean coarse sinter is shipped to the furnaces. It is apparent that in order to make this process a success financially, a large initial investment is necessary. The plant must be built in the most substantial manner, and only that machinery can be used which will operate efficiently and continuously under heavy loads and with little personal attention. At best, the profit per ton that can be made is small, and in order to make the proposition attractive financially, a plant of large capacity is necessary. While this process is a success, from the metallurgical point of view, its financial worth must yet be demonstrated. The Mesabi Iron Co. is now undertaking the last stage in the experiment, that is, the proving of the financial worth of the process.

As has been pointed out, now is the proper time to get this new industry under way. A great deal depends upon the success of this undertaking; possibly the whole future development of the district depends upon the success or failure of this particular attempt. If this undertaking proves successful, furnace companies looking for future ore supplies will be encouraged to secure them from the immense tonnages of low-grade Lake Superior ores. In this case, the district is just now starting on a new era in its history, and great activities may be expected in the future in the low-grade iron-ore industry. On the other hand, if this undertaking by the Mesabi Iron Co. proves to be unsuccessful, a great many years may pass before another serious attempt will be made to utilize the low-grade ores. In fact, if the previous conclusions in this discussion are correct, the failure of this first endeavor will probably cause the people in search of future ore supplies to look elsewhere, and the immense amount of low-grade ore available in this district may never be utilized.

It now is apparent that the success or failure of this first attempt means much in the history of the Lake Superior region. Thoughtful men of the iron-mining industry are watching the progress which D. C. Jackling and his associates in the Mesabi Iron Co. are making with the greatest interest. They recognize the fact that failure means a gradual decline of the district, while success means the awakening of a new period of activity. If the hard rock of the eastern Mesabi containing only 20 to 30 per cent iron can be mined, crushed, and concentrated into merchantable ore, it is not difficult to believe that the vast amount of comparatively soft hematite containing from 35 to 45 per cent iron can first be rendered magnetic by roasting and then concentrated magnetically in the same manner as previously described for eastern Mesabi rock. It will be necessary for some group of men, having ample financial resources, to undertake the work of proving the possibilities of this method of treatment, exactly as the Mesabi Iron Co. is doing with the magnetic ores.

It should be clearly understood, however, that the profit per ton that can be made by treating low-grade material will be very small, and only by handling immense tonnages will real success be assured. The state must realize this fact in connection with its taxation problems, and the property owners must understand that this ore material is worth nothing until it is manufactured into a merchantable product. They must, therefore, be content with small royalties.

In considering the situation as a whole, it seems that the people of the Lake Superior mining district are certainly to be congratulated upon their past accomplishments and upon the bright outlook for the future. The low-grade iron-ore industry is beginning, just as it should, long before the merchantable ores have been exhausted. The state of Minnesota need have no fear of an iron-ore shortage or a barren waste of abandoned mining lands. The iron-ore industry will be thriving in this district as long as iron and steel are useful metals, provided careful and exhaustive study of the treatment of low-grade material continues and all possible encouragement is given to this important industry by state and federal authorities.

Large Increase Is Shown in Hardware Prices

Prices on hardware and kindred lines have increased approximately 170 per cent for the period beginning Jan. 1, 1915 and ending June 1, 1920. Among the articles listed are hammers, with an advance of 296 per cent had the highest rate of increase and wire shoe nails the smallest with 22 per cent. A part of the comparative hardware price compiled by A. J. Bihler, James C. Lindsay Hardware Co., Pittsburgh, and issued by the National Hardware association, Philadelphia, are as follows:

Article	Per cent	Article	Per cent
Augers	122–132	Plows	73
Axes	135	Pulleys	180–260
Bars, steel crow	330	Pumps	192
Bits, auger	70–293	Punches	233
Bolts	122–271	Rivets	110–275
Chains	158–230	Saws	95–140
Drills	82–167	Screws	164–218
Files	118–167	Shoes, horse	80
Hammers	256–296	Shovels	185
Hinges	144–264	Sledges	135
Hatchets	210	Steel, tool	161
Locks	137–243	Stocks and dies	136
Mattocks	251	Vises	130–208
Nails	22–287	Wedges	270
Netting	117–119	Weights, sash	233
Picks	251	Wire	118–131

Fabricating Steel Foundry Flasks

Rigidity Is Obtained by Forming Ribs on 3-Inch Centers — Bottom Half of Each Rib Is Made Shallow to Provide a Shoulder Upon Which the Sand Rests — Diversified Uses of Flasks

CONCURRENTLY with the development of mass production in the automotive industry came a transformation in the methods of manufacturing the various parts which comprise the complete motor car. These changes affected practically all processes, including that of producing castings. Foundrymen who previously had received orders involving hundreds of castings from a single pattern were compelled by the demands of automobile builders to seek equipment suited for the economical production of thousands of identical castings.

The new requirements were met by adopting machine molding on a more extensive scale and by employing more durable patterns and molding flasks. Cast and pressed steel came into widespread use and at the present time practically all of the engine castings and most of the other cast parts of automobiles are poured in metal flasks. Because of their lightness, rigidity and durability, pressed steel flasks are being used for molding automobile pistons, flywheels, truck wheels, rear axle housings, tractor parts, etc.

Among the companies which recently have engaged in the manufacture of steel flasks is the Truscon Steel Co., Youngstown, O. Stock from which the flasks are made is copper-bearing, open-hearth, medium blue annealed plates, 60 x 100 inches. It is rolled by outside mills in thicknesses of ⅜, ⅝, ½

FIG. 1—FLASK, WEIGHING 87 POUNDS, USED EXTENSIVELY IN MALLEABLE FOUNDRIES

and ¼ inch. Upon delivery to the Truscon plant the steel is piled in a warehouse, which is built at right angles to the building housing the pressed steel department. An electrically driven shear, equipped with an adjustable stop gage on the back table, is built at the end of the warehouse nearest the pressing department. The plates are taken from the stock pile as required, placed on a pressed steel platform made by the Truscon company, and transferred to the shear where they are trimmed or cut to the exact size for forming the particular flasks on order.

After the cut is made the blanks are piled on a steel platform and taken to a large press in the forming department where the first operation is performed. This consists of stamping one or more ribs on 3-inch centers according to specifications. Sections 3 inches high are made with one rib, sections 6 inches high with two ribs, etc. Where a section is built with two or more ribs, the latter are pressed in the metal one at a time in order to avoid stretching the steel. The top half of each rib is made with a steep slope in order that the sand will slide in position easily when the flask is placed in service; the bottom half of each rib is made shallow and acts as a shoulder, upon which the sand rests.

To provide a place for clamping the cope to the drag and to permit the ramming of sand without interference, the practice followed by the company is to turn the top flange of the cope and the bottom flange of the drag outward and the sand strips inward. Some users, however, desire both flanges turned inward. After the flanges have been formed the next operation is to turn the corners. Before this can be done, however, it is necessary to anneal the steel at the place where the bend is to be made in order to relieve the hardness introduced to the steel during the forming operation. The steel is removed from the flanging press, placed on the floor and the flanges heated with an oxygen-acetylene gas flame. The die used for turning the corners is of the built-up type and affords the stamping of any number of ribs of any width. Round flasks are formed in a similar manner

FIG. 2—MAIN AISLE IN THE PRESSED-STEEL DEPARTMENT OF THE TRUSCON STEEL CO., YOUNGSTOWN, O., SHOWING THE DIVERSIFIED LINE OF PRODUCTS MADE

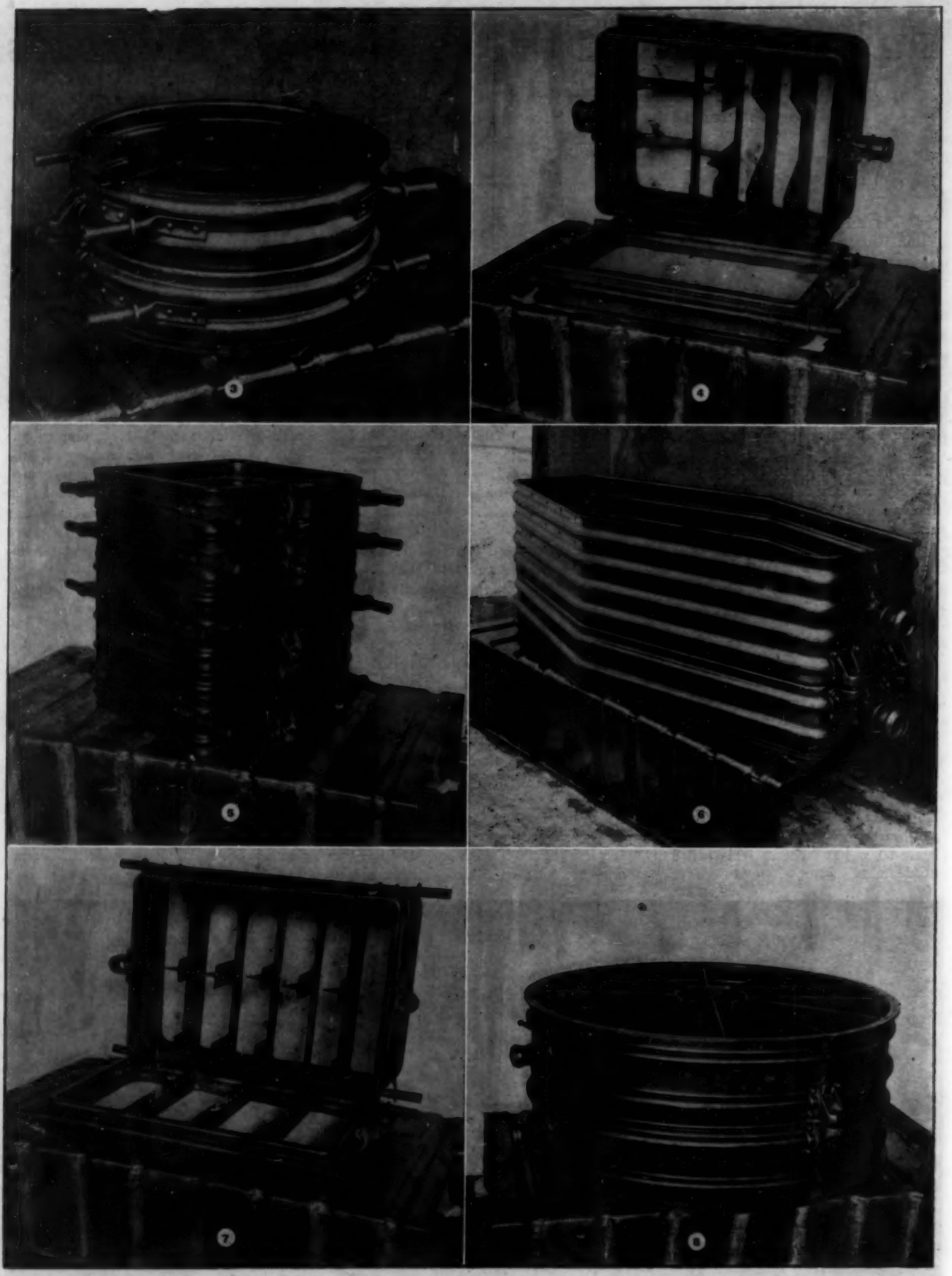


FIG. 3—CIRCULAR-TYPE FLASK ILLUSTRATING TYPICAL BARRING CONSTRUCTION. FIG. 4—WHEN FLASKS OF THIS TYPE ARE EQUIPPED WITH TRUNIONS, PIPE SOCKETS ARE USED INSTEAD OF HANDLES. FIG. 5—5 FLASKS OF THIS TYPE ARE USED FOR MISCELLANEOUS WORK AND ARE PROVIDED WITH DOWEL PIN BRACKETS SO THEY CAN BE BUILT UP TO ANY DESIRED DEPTH. FIG. 6—FLASK USED FOR CASTING REAR AXLE HOUSINGS FOR TRUCKS. FIG. 7—FLASK USED FOR CASTING TRACTOR PARTS. FIG. 8—CIRCULAR FLASK, WEIGHING 208 POUNDS, USED FOR CASTING TRUCK WHEELS

FIG. 9—PRESSED-STEEL BOX AND PLATFORM USED FOR HANDLING SMALL PARTS

as the square types with the exception that the built-up die strikes each half section three or four times while only one stroke is required to round the corners of the square flasks.

After the corners are rounded the shells are inspected, matched, and taken to assembly benches where two sections are clamped together to form the flask. In this condition they are transferred to the welding shop which is housed in a separate building off the pressing department. The welding department is equipped with eight electric welding machines, these being operated in individual compartments. At this stage in the process of manufacture only the inside seams are welded. The flasks then are taken to the drill presses where four holes are drilled in the center of each end for the dowel brackets and four additional holes near the rounded corners for the handle and handle bracket. The dowels, which are made of malleable iron, then are drilled and the whole taken to the riveting department where the handles and brackets are attached with ⅞-inch rivets driven hot. Gas muffle furnaces are used for heating the rivets.

The stock then is returned to the

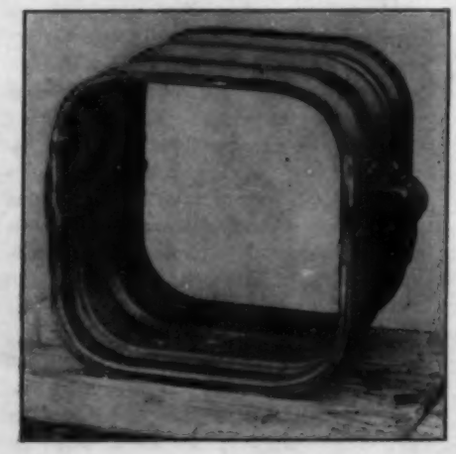


FIG. 10—FLASK, 13¼ INCHES SQUARE, USED IN MAKING AUTOMOBILE PISTONS

welding department for welding the cross bars in place. Prior to this step, however, the bars are lined up by a jig. Certain foundrymen order their flasks with the bars welded on one side and riveted on the other. Ordinarily the bars are welded in place. Several types of flasks, particularly those of heavy construction, are equipped with trunnions, which are formed from 2-inch steel pipe with collared ends. A heavy ring is welded in the center of each trunnion to form a second collar and the whole welded to the sides of the flask. Malleable iron trunnions originally were used but when shipments of the castings became difficult, officials endeavored to find a substitute. A flask was equipped with welded steel trunnions and after being loaded with two tons of steel, the whole was lifted by a crane, the trunnions bearing the entire weight. As no deflection of the trunnions or walls of the flask was noticed the test was carried further by hammering with a heavy

FIG. 11—CIRCULAR-TYPE FLASK, 17 INCHES DIAMETER, USED IN MAKING AUTOMOBILE FLYWHEELS

sledge. Numerous blows failed to break the trunnions at the weld although they did cause the trunnions to break a short distance away. Four short steel pipes, 1-inch in diameter, are welded to the corners of the flasks equipped with trunnions to afford easy handling. In preparing these handles they first are heated to the desired temperature in a gas-fired muffle-type furnace, and then taken to a small press, which flattens and grooves one end. The grooved end is welded to the side of the flask, the open end of the pipe forming the handle.

After any extra metal due to the welding process is ground off, the flasks are transferred to a table where by means of jigs the dowel pin holes are accurately drilled. The holes then are reamed. At the beginning of the fabricating process the flasks are made ⅛-inch higher than specifications, in order to provide enough leeway for

FIG. 12—COPE, 4½ INCHES, AND DRAG, 3 INCHES, BOTH WEIGHING 45 POUNDS, USED FOR MAKING AUTOMOBILE FLYWHEELS

flattening upon completion of the work. The final pressing of the flask to make it conform to specifications removes any twists and leaves the sand strips smooth. Any dents in the sand strip, which the press fails to remove, are eliminated by hammering when the flasks arrive at the inspection benches. After a rigid inspection the flasks are shipped.

Before any actual work is begun on the flasks, blue prints are prepared by the engineering department of the Truscon company and forwarded to the customer for his approval. Where an order embraces flasks which are to be equipped with bars, the customer usually furnishes wooden pattern together with templates, these aiding in the preparation of accurate drawings and in a more prompt completion of the order.

Fig. 6 shows a double tapered flask made from ⅜-inch plates and weighing 225 pounds. The cope is 12 inches and the drag 7 inches. Flasks of this type were built for use in casting rear axle housings for automobile trucks. The shell of the flask is drilled to receive cast-iron bars for the various types of axles made. The tapered flask shown in Fig. 13 was made for casting the dash of a tractor.

The flask shown in Fig. 1 is 19 x 19 inches inside the sand strip and includes a 4½-inch cope and a 14½-inch drag. It is made of ⅛-inch stock and

FIG. 13—IRREGULAR-SHAPED FLASK, WEIGHING 120 POUNDS, USED FOR MAKING A TRACTOR DASH

weighs 87 pounds. Prior to shipment all copes were drilled for bars, which were to be cast and bolted in place by the customer. Quarter-inch plates were used in making the flask shown in Fig. 4. The total weight is 195½ pounds. The arrangement of the bars in the cope is typical of many orders received by the Truscon company. Practically all flasks equipped with trunnions have pipe sockets instead of handles welded on the cope.

The type of flask shown in Fig. 5 is used extensively by a manufacturer of electrical equipment. The size is 18 x 18 inches, the various sections being 4 and 7 inches high. Inasmuch as the flasks are used for miscellaneous work in the foundry both flanges are turned inward. In addition the flasks are provided with dowel-pin brackets at both the top and bottom in order that the flask may be built to any desired height. Fig. 7 shows a 19 x 28-inch flask with a 9-inch cope and a 3½-inch drag, which was made for a tractor company. The illustration shows the method employed for attaching the bars to the sides of flasks intended for special jobs. The cope and drag shown in Fig. 3 each are 20¾ inches diameter and 5½ inches high. Flasks of this type also are used extensively for making tractor castings.

A large number of flasks similar to the one shown in Fig. 12 are in service in plants making flywheels for automobiles. They are 17 inches diameter and include a 4½-inch cope and a 3-inch drag, the whole weighing 45 pounds. The flask shown in Fig. 8 was made for casting truck wheels. It is 36 inches diameter with an 8-inch cope and an 8-inch drag weighing 208 pounds.

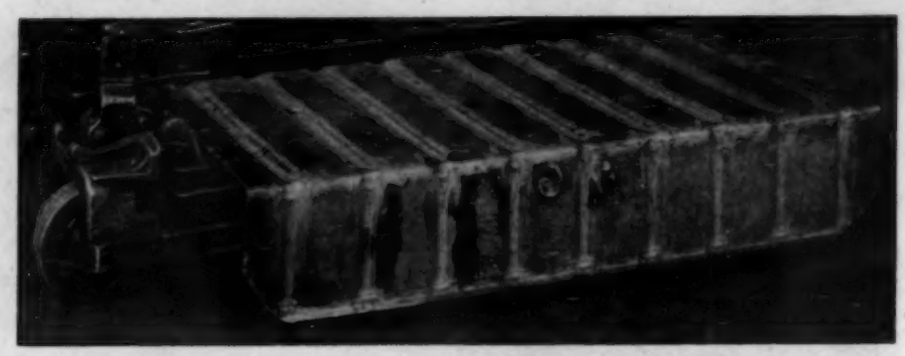


FIG. 14—PRESSED-STEEL PLATFORMS USED IN CONJUNCTION WITH ELECTRICALLY AND HAND-OPERATED LIFT TRUCKS. THE PLATFORM IS OF ONE-PIECE CONSTRUCTION

The circular flask shown in Fig. 11 also is for making automobile flywheels. The square type flask shown in Fig. 10 is used extensively for making automobile pistons.

A description of the Truscon Steel Co.'s plant was published in the April 24, 1919, issue of THE IRON TRADE REVIEW. As pointed out in the article, the pressed steel department of the Truscon company then had been engaged on peacetime work only a few months, although during that time a variety of products had been substituted for gas shells and booster castings. These included plow seats, harvesting machine tool boxes, cultivator shields and automobile radiator casings, and step hangers. Within recent months, however, automobile wheel flanges, flasks, motorcycle stampings, housings for automobile starting and lighting systems, steel boxes, and steel platforms have been added to the list.

The steel platform shown in Fig. 14 is adapted for use at plants where electric or hand lift trucks are employed for transferring material from one department to another. It is made of one piece of steel and is heavily ribbed. By welding a steel box to a steel platform, the company has developed a unit suitable for handling small parts in the shop. The top flange of the box is doubled back on itself to form an integral reinforcing of the top edge where abuse is likely to occur and also to prevent the flange from cutting the hands of the workmen. Stiffening properties are obtained by forming deep ribs on 3-inch centers around the sides. The box either is welded to the platform or it is fitted with lugs at the four corners to set down into the vertical corrugations in the legs of the platform, thus making the box detachable. With the detachable type the skeleton boxes can be removed and the platform used for handling pieces of material which are too long to fit inside the box; or, when the shop is working on an order including small parts, the skeleton box can be set on its platform and the pieces transferred from one job to another.

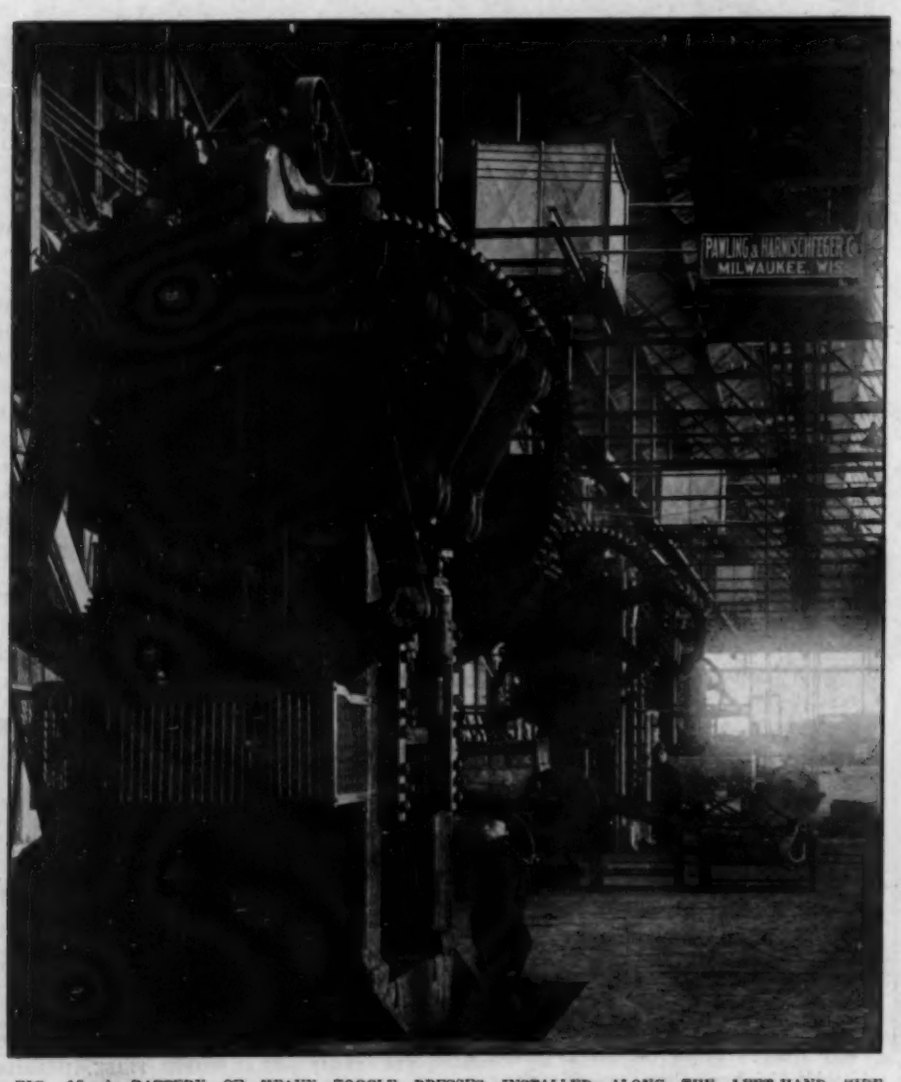


FIG. 15—A BATTERY OF HEAVY TOGGLE PRESSES INSTALLED ALONG THE LEFT-HAND SIDE OF THE PRESSED-STEEL DEPARTMENT OF THE TRUSCON STEEL CO.

Labor Turnover Least in 1915

Government Study Shows Instability of Workers in 10-Year Period, Using New Method for Compiling Statistics Indicating Trend of Employment—Greatest Shifting Occurs in the War Years

LABOR turnover in the United States was less in the calendar year 1915 than in any similar period in the past decade, according to a review of the subject soon to be published by the government bureau of labor statistics. This study, it appears, is something new, and has been worked out by the bureau as a means of determining the instability of employment in any factory, any plant division or any group of industries.

While the figures used in the compilation of tables, rates of changes, etc., are not in full for the entire country, they are, it is pointed by the authors, Paul F. Brissenden and Emil Frankel, indicative of the general mobility situation at given times. For example, the number of establishments reporting for the 10 years aggregate only 774, many of which are duplications in two or more years, the size of the work forces covered by the study amounts to only 2,117,682 workers for the full 10 years.

It may be stated the phrase "labor turnover" does not carry in the authors' minds the meaning they try to convey in "mobility." Mobility is sometimes used synonymously with "stability" and "instability." Mobility is made up of "accessions" and "separations," each of which is selfexplanatory, and "labor flux" which is the combination of the two, and perhaps more generally recognized as "labor turnover." The summary points out that the rates of accessions, separations and labor flux are arrived at by multiplying the number of each by 10,000 and then dividing the result by the total number of labor hours, the rate obtained being that for 10,000 labor hours.

With this explanation and study of the accompanying table, it will be found that in 1915 the number of workers hired was at the rate of 2.6 per 10,000 labor hours while those leaving service were at the rate 2.1, making a total labor flux of 4.7 per 10,000 labor hours. Last year, with so much talk of labor unrest, the flux rate was 5.8 equivalent of that in 1911. The rate next best after 1915 was in 1914 when it was 5.6. The government fiscal year of 1918 and the calendar year of 1918 showed periods of greatest instability, the flux rates being 13.6 and 10.8, respectively. The year of 1913, the last year of great unemployment, had a rate of 9.0.

Methods Compared

The summary compares, briefly, the bureau's old method of rate per full-year (3000-hour) worker and the "percentage of turnover," or Rochester method. It says:

"A separation rate of 1.0 per full-year (3000-hour) worker, as the bureau of labor statistics has lately computed mobility rates, or a separation rate (called according to the Rochester method 'percentage of turnover') of 100 per hundred on the work force, as the bureau formerly figured 'turnover,' are both equivalent to a separation rate of 3.3 per unit of 10,000 labor hours as used in this report. Conversely, a separation rate of 6.7 per 10,000 labor hours as used in this report is equivalent to a separation rate of 2.0 per full-year worker and to a 'percentage of turnover' (Rochester method) of 200. The flux rate for 1913-14 on the new basis explained above is 6.4 which is the same as a flux rate of 1.9 per full-year worker. Such a rate indicates that during the period under observation the sum total of the number hired and leaving is about equal to twice the number of full year workers employed."

Labor Mobility Rates

	Accessions	Separations	Labor Flux
1910	3.5	3.4	6.9
1911	2.9	2.9	5.8
1912	3.7	3.2	6.9
1913	4.5	4.5	9.0
1913—14*	3.1	3.3	6.4
1914	2.7	2.9	5.6
1915	2.6	2.1	4.7
1916	4.6	3.6	8.2
1917	4.6	4.3	8.9
1917–18*	6.9	6.7	13.6
1918	5.8	5.0	10.8
1919	3.0	2.8	5.8
Total	4.0	3.9	7.9
	—Rate per 10,000 Hours—		

*The figures given for "1913-14" and "1917-18" are from establishments reporting in great detail during the two field investigations of this subject made by the bureau of labor statistics in 1914 and 1918. The time covered by the statistical data from these establishments is a 12-month period ending, usually, about the middle of 1914 and 1918, respectively.

Continuing, the report says:

"The enormous proportions that labor mobility may take on will be appreciated in the combined figures for the years 1910 to 1919 which show that in the establishments reporting, the accomplishment of 6,353,046,000 hours of work, which is labor time equivalent to that of 2,117,682 full-year (3000-hour) workers, entailed 2,564,037 accessions and 2,481,280 separations, or a total of 5,045,317 labor changes. In other words, on the average for each year of the decade, 256,404 accessions, 248,128 separations, or a total of 504,532 labor changes were involved in the maintenance and the necessary enlargement or curtailment of a labor force of 211,768 workers. It appears, then, that on the average the number each of persons who quit, who were laid off or were dicharged, as well as the number who had to be hired, was much larger than the total number of workers on the force at any one time.

"Throughout the 10-year period, for every equivalent 3000-hour worker in the aggregate work force, there were on the average more than two labor changes per year. In 1915, the period of least instability, there were about one and a half labor changes for each full-year worker. In the war period, 1917-18, there were more than four labor changes for each full-year worker in the aggregate work force. This is as if during these 12 months all the employes had left their jobs, an entirely new set had come in to fill their places, and afterwards all the employes in this second set had left their jobs and had in turn been fully replaced by a third set of workers. There is also to be observed a very definite tendency of the mobility rates to vary with the prevailing industrial situation. This is indicated by relatively high mobility rates for the years 1913 and 1917-18, years of great industrial activity, and by a recession in the rates in years in which the industrial situation has been less favorable."

Specifically, in "miscellaneous metal products manufacturing" industries, under which the iron and steel industry probably is classed, it is shown that in the government fiscal year 1919 the accession rate was 10.6 and the separation rate 10.1, giving a total flux rate of 20.7. In the fiscal year 1914 the accession rate was 2.7 and the separation rate 3.1 making the flux rate 5.8. In 1919 the number of establishments reporting was 45 and in 1914, 20. The 45 gave their work forces as totaling 32,682 and the 20 as 63.797.

Drawings for a special electric furnace for co-operative work with the Primos Chemical Co., on molybdenum steel, have recently been completed for the Golden station, bureau of mines, by Mr. Keeney, of the experimental plant of the Colorado School of Mines.

Krupp's in Peace-time Pursuits

THESE photographs showing the reconstruction of the cast steel works of the Krupp plant in Essen, Germany, were made in April, 1920.

Fig. 1—The largest plate mill in Europe at Krupp's Essen plant. This mill was designed for rolling armor plates weighing 150 tons and up to 15 inches in thickness. It is now employed for the production of boiler steel. The rolls which are 49¼ inches in diameter and 177 inches in length are driven by a 10,000-horsepower reversing steam engine. Boiler plates up to 14½ feet wide have been rolled in this mill. A somewhat similar but smaller mill at Krupp's Rheinhausen plant is now employed for rolling rails, its maximum output being 25,000 tons per month. On Feb. 1, 1920, the Krupp establishment employed 86,265 workmen; this may be compared with 80,291 in July, 1914, and 170,383 at the high point in May, 1918. Wages have advanced from 6 marks per day in 1914 to nearly 40 marks at present.

Fig. 2—The molding of the locomotive driving-wheels centers at Krupp's Essen cast steel works. Wooden patterns are employed and the molds are rammed up on the floor, the copes and drags being handled by the jib cranes shown in the illustration.

Fig. 3—One of Krupp's great gun-shops built during the war for the manufacture of field artillery has been completely remodeled for building locomotives. This shop now has a capacity of 300 locomotives per year with two 8-hour shifts at work. This illustration shows a gang milling operation on connecting rods which are cut solid from steel plates rolled in the mill shown in Fig. 1.

Fig. 4—Another gang milling operation in the Krupp locomotive plant.

Fig. 5—Locomotive boiler assembly bay in former gun shop at Essen.

Fig. 6—Erecting Krupp's first locomotive in the transformed gunshop

Reconstruction Work at Essen

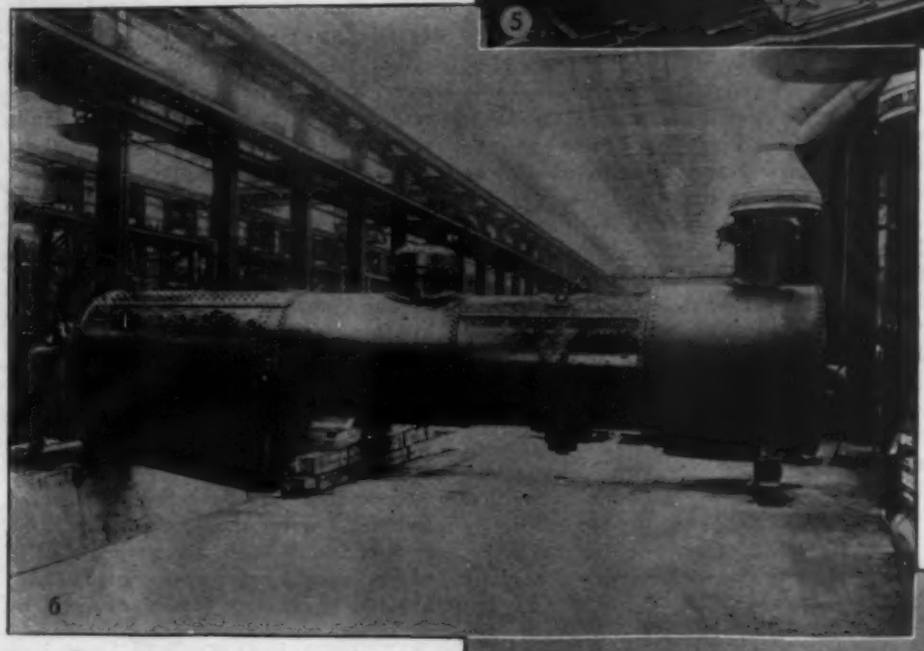
at Essen. Eventually it is hoped to turn out 400 locomotives of this type yearly. Krupp's locomotive shop has an area of 20 acres under roof.

Fig. 7—Krupp's first locomotive designed for hauling freight trains on the Prussian state railways.

In the spring of 1920 Germany was building 120 locomotives per month and the new Krupp works at Essen were reported to be producing one-fifth of this number. Between the day the armistice was signed and March 1 the Krupp plant had overhauled 300 additional locomotives. Freight cars are being constructed at the rate of 2000 per year.

The floor area of the Krupp shops was increased 70 per cent during the war, but of the 10 new Krupp shops mentioned on page 277 of the Jan. 22 issue of The Iron Trade Review only seven were productive in March this year. It was estimated at that time that the works were operating only at 30 per cent of capacity, due to the shortage of raw materials, and especially coal. The introduction of the 8-hour day with two shifts, 6 a. m. to 2 p. m. and 2 p. m. to 10 p. m., also was a contributing factor.

The management expected to have the plant operating on a basis of 50 to 60 per cent of capacity by this summer, but that was before the recent political upheaval which tended still further to disturb the labor situation and lower the morale of the workmen. Half of Krupp's output before the war, in money value was in military equipment, and about one-fifth of the weight of the steel manufactured also was represented in such equipment. The task of transforming the manufacturing policy of the company was practically completed in the spring, and among the kinds of equipment now being manufactured, in addition to a full line of railroad apparatus and rolling stock are agricultural machinery, farming and road tractors, stationary diesel engines and typewriters.



Applying Oxygen in Metallurgy

Enrichment of Air by Oxygen Is Possible Means of Effecting Economy in Blast Furnace, Open Hearth, Converter and Electric Furnace — Believes Blast Furnace Design Would be Affected

BY F. G. COTTRELL

ALTHOUGH oxygen is the commonest of all the chemical elements, making up nearly one-half of that portion of our globe which we have yet penetrated and is found in a perfectly free state in the air, simply mixed with about four times its volume of inert nitrogen and very small amounts of other gases, still it never has yet been separated and used in any concentration above that of the atmosphere on a scale at all commensurate with its importance and industrial possibilities. The reason that the possibilities and importance of very large scale applications of concentrated oxygen have not heretofore been fully appreciated and developed probably lies in the very magnitude of the project and the diversity of both technical and economic elements involved, rather than in any special difficulty inherent in any one of these individually. In other words, what is most fundamentally needed is the broad comprehensive grasp of the interrelation of these parts of the problem to one another and the ability to find, bring together and hold in active effective co-operation the specialists who can successfully deliver each element of the undertaking, be it techinical, administrative or financial.

Separates Oxygen From Air

Turning to the history of commercial oxygen production we find the early industry based generally upon the decomposition of potassium chlorate by heat and the chief market for the gas in the oxyhydrogen or lime light for stereopticon and spectacular purposes with a smaller though important field for medical use. This process of manufacture held the field for practical purposes for many years. Later came the Brinn process substituting barium dioxide for the potassium chlorate and having the significant novel feature of regeneration of the residue of barium monoxide back again to barium dioxide by recombination of oxygen from the air through a change of either pressure or temperature, thus amounting on the whole to the use of barium compounds merely as a carrier to effect the fairly direct separation of oxygen from the air.

Development of Other Processes

The Brinn process came very early however, into active competition with the production of oxygen by the electrolysis of water, the acceleration in the growth of this latter from about 1895 being a natural consequence of the rapid general development and introduction of electric power into industry in general. Since in the electrolytic process the determining factor of cost is the power consumption, and it was relatively easy from the first to closely approximate in practice the theoretical efficiency possible by this process, the cost of oxygen soon became standardized to the cost of power on the open market and became almost as stable as that of power itself. Furthermore, electrolytic cells were relatively easy to build and operate in units of any size and there were no truly fundamental patents to affect the situation.

The last and most important innovation was the commercial development by Carl Linde, of Munich, and later by Georges Claude, of Paris, of air separation through liquefaction and distillation. This it was that first vividly opened up to those in position to appreciate it the real vision of the ultimate possibilities for really cheap oxygen. It did not and has not to date, however, brought any significant lowering of the price of oxygen to the ultimate consumer and this is still practically determined as far as this country is concerned by the cost of production of the 25 per cent of our present supply still manufactured through the electrolytic process, plus the cost of bottling, freight on steel cylinders and overhead of the sales and administrative machinery required in such a business.

Speaking in round figures, present production of oxygen in the United States is about 3,000,000 cubic feet, or say, 130 tons, of oxygen per day, over 95 per cent of which is probably used in torches for cutting and welding purposes. The one-quarter of this produced by electrolysis comes from several hundred privately owned plants, many of them quite small, and producing gas only for their owners' uses. The remaining three-fourths of the supply comes from about 50 air liquefaction plants owned and operated by the Linde Air Products Co., using the Linde process, and the Air Reduction Co., using, for the most part, the Claude process, but with still some production from the old Hildebrand process. Practically the whole product from both companies is compressed into steel cylinders and sold to the trade.

The largest single installation for air separation ever erected was in connection with the cyanamid nitrogen fixation plant built for the government at Muscle Shoals, Ala., during the war. This consists of 30 of the largest size of Claude units. It was built primarily to secure nitrogen but if operated at full capacity for oxygen would be just about equal in output to this country's total production as given in the foregoing, and this in turn is just about equal to the amount of oxygen blown in as air to one full sized iron blast furnace making approximately 500 tons of iron per day. The United States' average daily production of iron last year was equivalent to that of about 170 such furnaces, running every day in the year.

Computed directly from its heat of formation water should theoretically be decomposable with a voltage of 1.48 and a current consumption of 3,032,000 ampere hours, per ton of oxygen; or in round numbers about 6000 horsepower-hours, which even at 0.2 cent per horsepower hour would be $12 per ton of oxygen produced. This represents the energy of chemical combination of the oxygen with the hydrogen in the formation of water and must be supplied from without in the decomposition of the latter.

Gases Dilute One Another

In the separation of air on the other hand there is no chemical combination to overcome. The oxygen and nitrogen simply dilute one another in a simple mixture of the two, and theoretically require no energy expenditure for their mere separation. Due to their mutual dilution, however, their partial pressures in the mixture are only 1/5 atmosphere for the oxygen, and 4/5 atmosphere

From a paper presented at the New York meeting of the American Iron and Steel Institute, May 28. The author, F. G. Cottrell, is director, United States bureau of mines, Washington.

for the nitrogen and as when finally separated they must both have been compressed up to one atmosphere, we must do at least this much work upon them which amounts under assumption of isothermal compression to about 60 horsepower hours per ton of oxygen produced, or only about one per cent of that theoretically required by the electrolytic process for producing the same quantity of oxygen, the byproducts being in the one case 3½ tons of nitrogen and in the other ⅛ ton of hydrogen. The values above given are, of course, the purely theoretical limits based on 100 per cent efficiency for every step of the process and piece of the apparatus employed and apply equally to any "reversible" process irrespective of whether it depends upon mechanical, physical or chemical steps. Thus, whether we try to centrifuge the gases apart, or liquefy and distill them, or dissolve them in water under pressure and reliberate them in fractionated form from solution, or even combine the oxygen with barium oxide and reliberate it, as, in the old Brinn process, the theoretical limiting power requirements are the same and all that interests us from the power standpoint in any cyclic process is the measure in practice of its divergence from reversibilty. The criteria of selection among these alternative processes from the side of power consumption must, therefore, be based upon losses of reversibility, i. e., on friction, mechanical leakage, leakage of heat, chemical inertia, and losses of thermodynamc potentional generally. In practice today the electrolytic process actually reaches an efficiency of from 80 to 85 per cent and probably only very small additional gains on this can be looked for without running up fixed charges disproportionally.

Advantages of Liquefaction

Of all the proposed air separation processes, that of air liquefaction and distillation seems not only to have already outstripped all others in the race but to naturally present the most attractive features for large scale development.

The possible effects to be expected from oxygen enrichment of the air stream must be rather carefully distinguished under several different heads. The effect which we are most apt to think of first is simply raising the temperature. This may be beneficial and important in some cases, but most of our present metallurgical processes are already standardized to pretty definite temperatures for very good reasons and, if enrichment of air is applied to them, the chief reasons will probably be other than for a temperature change *per se*. In fact, many temperatures in metallurgical operations are more definitely defined by the character of the charge than is always recognized even by those most familiar with practical operation. This is particularly so in blast furnace operations for, if more heat units are supplied or less taken away the furnace simply runs faster, but the temperatures of the metal and slag can vary only slightly, as these are nearly though not quite completely determined by the composition and consequent melting point of the charge. The temperature of the coke and gas current in the furnace, especially in its lower position, may, of course, rise very considerably and this in turn slightly superheat the metal and slag as they fall through the lower part of the furnace filled chiefly with coke.

The most important way in which enrichment of blast may essentially influence blast furnace temperatures is indirectly by allowing variations in composition of charge, e. g., making of ferrosilicon or ferrochrome directly in the blast furnace. In the case of the open hearth, and especially the converter, the temperature question is a more pertinent one, as their operation is not controlled by the melting and automatically flowing away of their charges.

On the other hand, the distribution of heat between the hearth and shaft of the blast furnace is tremendously influenced by enrichment of the blast with oxygen because of the diminution of the total amount of gases going up the shaft per unit of carbon burned. It must be remembered that the blast furnace is of all our metallurgical equipment the most complicated from the standpoint of interrelated mechanical and chemical processes going on inside of it and has reached its present state of development by very gradual and conservative steps over a long period. It may, therefore, not present the most favorable unit on which to commence the regular use of enriched air for standard and continuous operation.

In fact if we ever come to use highly enriched air in making ordinary pig iron the resulting furnace is apt to have very little resemblance to the blast furnace of today. Our experence in the meantime with electric furnaces should help greatly in this evolution, as the conditions to be fulfilled in an enriched air furnace may reasonably be expected to lie between those of the electric and the present blast furnace.

As the blast furnace, however, is the piece of equipment requiring the most continuous and uninterrupted operation, it may be that the enrichment of air for it as an emergency measure in case of trouble such as a threatened freeze-up may prove of considerable importance, not that freeze-ups really happen with the frequency which one would assume from their prominence in text books and discussions, but that this very infrequency may mean that blast furnace operators have come to work with so safe a margin of condition to avoid them, that this insurance is costing daily in coke consumption and other requirements or results very much more than we realize, and if one could have a standby source of oxygen for enrichment purposes in case of emergency, even though it were not used at all in normal operations, it might permit of safely running on a very much closer margin in the heat allowance of the furnace and making important improvements in its general economy and efficiency.

Should Cheapen Equipment

Another important effect of the enrichment of the air would be the higher calorific value of the blast furnace gas obtained as a by-product due to elimination of part of its nitrogen. This in turn should mean cheapening of gas engine and other equipment on which it may be used.

The open hearth presents some of the most interesting possibilities for the application of oxygen, particularly in those operatons where the electrc furnace has been the open hearth's strongest competitors, e. g., where very high temperatures coupled with a reducing atmosphere are desired, as in the elimination of sulphur as calcium sulphide. With an open hearth using ordinary air, in order to reach the highest temperatures now attainable, a complete and carefully balanced combustion of the gases must be secured resulting in a neutral or slightly oxidizing atmosphere, whereas if part at least of the furnace's burden of inert nitrogen could be removed by the use of enriched air the same temperature could be reached while still leaving a residue of unburnt material in the gas thus producing a strongly reducing atmosphere.

By enriching the air the total volume of gases passing through the furnace per unit of fuel burned and heat produced may be cut down enormously, since in the air are four volumes of nitrogen to every volume of uesful oxygen. This would greatly facilitate heat exchange and reduce mechanical difficulties such as dust loses and maintenance and control of draft.

If we carry the application of oxy-

gen back of the open-hearth to the gas producer we may still further extend the same principles and deliver to the furnace more thermal units per unit of primary fuel consumed. Beside the actual saving of fuel which this represents, it may in some instances be still more important in cutting down the amount of impurities, especially sulphur, carried into the metal from the fuel. Aside from both of these considerations and viewing the gas producer simply as an isolated unit in connection with either heating or power operations, oxygen and enrichment of its air supply will permit the use of fuels which could not other wise be burned in it at all and thus vastly increase our fuel resources.

Suggests Possibilities

In the matter of possible application to the converter it is perhaps hazardous to speculate in advance of actual experimentation, but once an adequate supply of oxygen is available in the steel works such experimentation will almost inevitably produce useful results, some perhaps from directions we least expect. One of the conditions limiting what metal may go to the converter is the fuel value of the metalloids it contains and in many cases we are paying rather heavily through operating conditions of the blast furnace to put silicon into iron largely for its fuel value later in the converter. A good part of these heat requirements might be removed by abstracting part of the dead load of inert nitrogen from the converter air. Whether such a procedure might lead to a change in our practical classification of bessemer ores is an interesting question, but there seems to be so much difference of opinion at present and so many factors enter into the problem that all that can here be done is to merely mention the problem as suggestive of the wide and intensely interesting field of possibilities which cheap oxygen will open up.

It may be useful to point out how equally important and possibly even more diversified are the applications for cheap oxygen in the nonferrous field. In the copper blast furnace running on sulphides with its relatively short shaft and hot top, the advantage of oxygen enrichment is much less open to question than in the case of the iron furnace.

Struggling for Recognition

Last but not least may also be mentioned the part that oxygen may play in some of the newest developments of general metallurgy, viz., volatilization processes, where in contrast to most of the older metallurgical processes high temperatures may in themselves play an important role. Aside from zinc, cadmium and mercury it is only lately that we have seriously concerned ourselves with the primary recovery of metals by volatilizing them from their ores but just as hydrometallurgy after a long and discouraging struggle finally won a foothold through the success of the cyanide process to gold and silver ores, so now what we might term "gas-metallurgy" seems also struggling for recognition and finding encouraging applications to lead, copper, gold, and silver, to say nothing of potash and phosphorus.

Using Oxygenated Air in Ironmaking

BY C. A. MEISSNER

FREQUENTLY the hope has been expressed in technical literature that a material saving in coke consumption and an increased pig iron production could be obtained by the use of additional oxygen in the air. Some experiments have also been made in order to ascertain the effect of increased oxygen in air in blast furnace practice, notably at Ougree, Belgium, where Dr. Peters built a small blast furnace and operated it for several years with oxygen obtained by the Claude process and then for several months just before the world war began on air enrichment to about 10 per cent by means of centrifugal methods invented and perfected by Professor Mazza, of Italy.

Few, if any, of the results have been published and this seems to be the only really serious effort that has been made in this direction. Such results from Ougree as have come under notice have indicated that under their rather crude method of making pig iron with rather high coke consumption and low blast temperatures they obtained about 10 per cent reduction in coke consumption and about 10 per cent increase in pig iron production, and that this centrifugal method had had a further effect of reducing the moisture when conditions of high humidity obtained in the air, and giving a more even amount of moisture to the blast furnace, avoiding the peaks. Some further experiments were made by the late J. B. Johnson Jr., at Niagara, of which little seems to be definitely known, and this writer is not aware of any records left by him as to his results.

Corporation Studies Question

This subject has repeatedly been under discussion by the members of the blast furnace committee of the United States Steel Corp. and the general conclusions as to the effect of oxygenating the air for blast furnace use are given herewith. These conclusions are naturally based on theory, as we have had no practice to go by.

Ten per cent additional oxygen in the air has usually been accepted as being most likely to show what benefits could be derived by oxygenating the air. The knowledge that we have of Johnson's experiments would indicate that if 20, 30 or 40 per cent oxygen enrichment were employed the form of the blast furnace as well as its total equipment would have to be entirely changed. The question, therefore, is what will, say, 10 per cent, enrichment do in the present equipment in blast furnace practice. Most of the modern blast furnaces built on the best lines, with large hearths, steep angles and wide boshes, and equipped with ample stove capacity, will have a top temperature of the escaping gases of from 300 to 450 degrees Fahr. Many of the Minette furnaces in the Lorraine and Luxemburg districts of Europe will have a top temperature of about 215 to 300 degrees Fahr. To materially lower this top temperature would apparently cause very serious disadvantages in practice. It might even lead to a wet top that is caused by condensation of moisture from the gases at the top of the furnace. The only real saving that the use of oxygen could effect would be to still lower this top temperature by further concentration of heat in the combustion zone and in the hearth, and under modern conditions it is doubtful whether this saving will be appreciable in practice under such conditions.

There is no question that a higher temperature of combustion will be obtained in the hearth of a blast furnace by burning the coke with oxygenated air, but it is a well known fact that

From Mr. Meissner's discussion of Dr. Cottrell's paper on "The Future of Oxygen Enrichment of Air in Metallurgical Operations" before American Iron and Steel Institute at its meeting in New York, May 28. Mr. Meissner is chairman of the United States Steel Corp.'s committee on blast furnaces.

the temperature existing in the blast furnace hearth is almost exclusively governed by the heat balance depending on the heat producing and heat consuming reactions. This temperature should not be permitted to vary but very little in order not to cause changes in the quality of the pig iron, as therefore the hearth temperature remains the same, while the amount of heat carried off by the gases leaving the hearth per unit of coke carbon burned is less in proportion to the smaller amount of nitrogen in the blast. There should be more heat remaining available for the hearth reactions, and as there has been no greater heat demand created per unit of product a decreased coke consumption should result. This, however, means a decrease in the amount of gases produced as compared with the former operation and, therefore, a lower top temperature would inevitably result and as this lowering of the top temperature might seriously affect the operation of the furnace it would soon become necessary again to increase the coke consumption until the lowering of the top temperature has passed the danger point. Therefore, we can hardly expect to add any material coke saving through the enrichment of the air with oxygen under such conditions.

Where, however, we have furnaces operated with high top temperatures, such as those producing ferromanganese, ferrosilicon, or those working with rich ores, or having high top temperatures on account of poor construction and equipment or other conditions, a certain definte gain can undoubtedly be expected. Just what this gain will be no one as yet can tell, nor to what extent we can enrich the air beyond 10 per cent in such cases. There could be no doubt as to the value of enriching air with oxygen for blast furnaces in an emergency due to hanging or slipping, or becoming cold, or for any other reason, but then we have to consider the question of installation of such a plant as would give us cheap oxygen, and it would not be easy to arrange a plant for intermittent operation. There is, therefore, a big field for investigation on this subject still open to us.

A deposit of manganese ore, which was at first thought to be iron ore, has been found on the farm of W. W. Wilkerson in Talladego county, near Anniston, Ala. Analysis of samples from the deposit revealed that the metal is a high grade manganese, an alloy of steels. The owner of the property is planning the development of the ore vein through the organization of a company.

Canadian Production of Ore Declines

According to tonnage records compiled by the department of mines, the 1919 production of iron ore, pig iron and steel in Canada shows a marked decrease from the preceding year. The iron ore tonnage was the lowest in 19 years, pig iron declined 23 per cent from 1918 production and steel 45 per cent in the same length of time. Iron ore mined in 1919 was 195,970 tons including 321 tons of titaniferous ore produced some years previously. Exports of iron ore to the United States were 14,480 tons and imports from the same country 1,683,098 tons. The quantity of ore charged to blast furnaces in 1919 was 1,752,585 tons of which 78,391 tons were of domestic origin and 1,674,194 tons imported.

The total production of pig iron in Canada in 1919 excluding the ferroalloys was 917,346 short tons. In Nova Scotia in the same year 285,087 tons were produced which amount was the lowest since 1905 with the exception of 1914. In Ontario the situation was similar. The production was 624,993 tons in 1919 against 747,650 in 1918. Although less by 16 per cent than the year previous, the 1919 figures were only exceeded in four other years. Ferroalloys produced in Canada in 1919 including ferrosilicon, silicospiegel, spiegeleisen, and ferrophosphorus amounted to about 48,579 tons. The exports of pig iron were 63,605 tons of which 57,845 tons went to the United States, 783 tons to Chili, 7 tons to Japan, and 4970 tons to other countries. The ferroalloys amounting to 22,449 tons, included 2564 tons to Great Britain, 15,371 tons to the United States and 4514 tons to other countries. Imports included 35,800 tons of pig iron and 16,221 tons of ferroalloys. The United States trade records show combined exports to Canada of pig iron and ferroalloys amounted to 33,751 short tons.

Steel ingots and direct steel castings totaled 1,031,329 tons of which 994,349 tons were ingots and 36,980 tons were castings. The exports according to the customs department totaled 28,087 tons of billets, blooms and ingots, 52,191 tons of bars and rods, 30,737 tons of steel rails, 5515 tons of structural steel, 245,214 tons of scrap iron and steel, together with a large quantity of wire and manufactured iron and steel goods.

The Dravo Contracting Co., Pittsburgh, has launched the ninth large all-steel barge of an order of 15 for the Mississippi Water Transportation Co. to be used on the lower Mississippi river. The barge has been leased by the federal engineers of the Wheeling district and will leave Pittsburgh within the next 10 days to tow cement on the Ohio river.

Russia in Need of Iron and Steel Goods

Russia is in dire need of American iron and steel products, especially locomotives and freight cars, and is expected to begin negotiating immediately for their purchase, but difficulties in the way of establishing credit probably will prove an insurmountable barrier at this time, department of commerce officials say. For the present the results of the President's action in lifting the ban on trading with soviet Russia are likely to be more political than economic. Since the United States government can not protect its citizens in their trade ventures, the federal reserve board has warned banks not to accept Russian securities and payment for goods might be attached. Once these political obstacles are removed, resumption of exports to Russia on a large scale is expected.

What may be expected in the way of trade when normal conditions with Russia obtain can be seen from department of commerce reports on exports from the United States to European Russia in 1914 the last prewar year. These exports in 1914 were as follows: Agricultural implements and parts, $6,515,000; aluminum, $36,822; brass, $35,542; automobiles and parts, $907,000; copper, ingots and bars, $1,407,939; electrical machinery, $117,000; builders' hardware, $192,000; engines, $563,000; metal-working machinery, $1,333,644; mining machinery, $469,148; railway track material, $836,626; lead manufactures, $36,458; tools, $470,657; nickel oxide and matte, $72,000; zinc oxide, $24,470; pasenger and freight cars, $38,000; and firearms, $180,120. Practically the only iron and steel imports from Russia in 1914 consisted of 34,810 tons of manganese oxide and ore, valued at $197,736.

Compare Relative Elastic Strength of Steel

By means of tension, torsion and compression tests conducted by the engineering experiment station of the University of Illinois new conclusions have been reached regarding the relation between the elastic strengths of steel. In the experiments six grades, soft, mild and medium carbon steel

and vanadium, nickel and chrome nickel alloy steel were used all of which were hot rolled. Specimens for each of the three kinds of tests were made from each of the six materials totalling 160 pieces actually included in the test.

The results reached are particularly important to those phases of engineering in which carbon and alloy steels are put to severe uses, as in automobile and airplane construction. The assumptions from the tests are that the value of elastic shearing strength of steel and the yield point in shear as measured by the proportional or the useful limit point, may be determined from a torsion test of a hollow thin walled cylindrical specimen and the value for the elastic shearing strengths may be taken as 0.85 of the elastic strength obtained from a torsion test of a solid cylindrical specimen. For ductile materials the value is slightly more than this figure. With steel the elastic shearing strength is from 0.55 to 0.65 but may be taken with reasonable accuracy as 0.6 of the elastic tensile strength. The maximum shear theory of the failure of elastic action of ductile steel is not accurate but may be used in obtaining maximum results. Contrary to the general opinion the breakdown of the shearing elastic action of ductile and semiductile steel is gradual, more so, than the failure of elastic action in a torsion specimen. The amount of hot rolling received by steel may have a marked effect upon the relation between the elastic tensile and compressive strengths. The choice of the criterion of elastic strength may be important in some cases and tensile tests may require supplementary compressive tests before the elastic properties data can be relied upon.

Belgian Industry Is Rapidly Reviving

BY FRANCIS MILTOUN

Paris Correspondent of The Iron Trade Review

AN OFFICAL document of the Belgian ministry of commerce and industry just come to hand presents Belgium's future in glowing colors. For those who have seen the actual manifestations of the results of the country's attempts at recovery from the ills of war there will be no need to discount the statement.

Belgium was the country of Europe where before the war industrialism was most intensely developed. Of its population in 1910, 1,760,000 were employed in industry and but 322,725 in commerce. This represented 40 per cent of the total population whereas in the figures for Germany the proportion was but 23 per cent, and for France, 23.5 per cent.

Coal was produced from 125 active mines to the total of 22,800,000 metric tons. Coke was produced by 41 plants, the output being 3,500,000 metric tons. Briquetted fuel was produced to the extent of 2,608,640 tons by 62 plants.

Belgium, though possessing practically no ores, had a very flourishing metallurgical industry. In 1913 there were 54 blast furnaces producing 2,484,694 tons of iron. Its zinc industry was one of the most important in the world, 14 plants in 1913 producing 204,220 metric tons. There were 29 steelworks and 38 other plants which untilized the product of the blast furnaces, and which manufactured finished material requiring 437,110 additional metric tons of pig iron from foreign sources.

Taking the figures of 1919, now given for the first time in their entirety, one feature of development is represented as follows:

Belgian Output in 1913 and 1919 Compared

	Number	Personnel in December 1913	Personnel in December 1919	Tonnage of single working day, December 1913	Tonnage of single working day, December 1919
Blast furnaces (independent)	3	440	206	360	...
Blast furnaces of steel plants and rolling mills	11	18,975	11,726	16,367	6,414
Blast furnaces of iron mills	2	1,350	30	720	...
Iron and steel rolling mills	3	1,673	1,815	285	350
Blast furnaces of fabricating works	1	218	...	150	...
Rolling and fabricating ironworks	11	4,224	2,885	903	384
Rolling mills (independent)	16	4,016	2,401	1,093	534
First fusion steel foundries	14	5,652	2,916	187	79

Percentage of personnel 1919 in comparison with 1913, 60 per cent.
Percentage of production, 34 per cent.

COAL PRODUCTION

Per working day in December

	1913	1919	Per cent
Personnel	148,748	154,533	104
Production (tons)	78,886	73,981	94

COKE PRODUCTION

Per working day in December

Personnel	3,092	1,640	53
Production (tons)	8,729	2,898	27

It should be remembered that at the time of the armistice Belgium plants were in ruins. The figures show they have had an almost phoenix-like rise from the ashes of war.

In regard to the following iron and steel export schedule the ministry states:

1 Metallurgical industry. The increase from August, 1919, of 2000 tons to 7000 tons in September was caused by the receipt of a large tonnage of hematite ore which was immediately worked up and exported in September.

2 Of construction iron and steel and attendant industrial applications there is a corresponding falling off in exports as the general metallurgical industry advanced its exports.

METALLURGICAL PRODUCTS

1919	Metric Tons
August	2197
September	7171
October	4844
November	5514
December	5983
1920	
January	6729
Monthly average, 1913	48,293

FABRICATED PRODUCTS

1919	Metric Tons
August	13,765
September	9,800
October	15,739
November	5,425
December	26,289
1920	
January	27,240
Monthly average, 1913	72,571

The following table shows in metric tons the exports of raw or semifinished materials for the respective years:

	1919-1920	1913-1914
August	620,631	1,352,386
September	550,881	1,389,900
October	475,377	1,343,974
November	424,816	1,180,223
December	485,086	1,408,611
January	393,477	1,236,097

If it is necessary to account further for the reduced production in 1919 it is only to be recalled that during the Belgian occupation 17 great iron and steel works suffered all but total demolition, and in many instances were entirely destroyed. But three blast furnaces out of the 54 originally existing remained upright. Metal working industries also suffered severely, many of them having been wiped out .

With the revival of better conditions which are now making themselves felt in Belgium, after the labor transport and fuel difficulties of March and April, the country may be truly said to be making steady progress, more noticable than that of France or Italy, and doubtless more so than that of Germany.

Builds Forge Shop

(*Continued from page* 300)

a standard metallurgical and chemical laboratory, one view of which is shown in Fig. 4, is maintained by the Duff Mfg. Co. In this laboratory, analyses are made of steels, flue gas, fuels and boiler water; microscopic examinations and photomicrographs of steel also are made; thermocouples are calibrated and welded; experimental heat treating operations are performed; and Brinnel and scleroscope tests of hardness are made. In order that inaccuracies may be reduced to a minimum, the balances and the microscope are set on solid concrete foundations. A quiet separate room, free from acid fumes and air currents, is provided for the balances, and a properly ventilated dark room is located in one corner of the building.

Steam Generating Equipment

In the power plant, steam is generated for the use of the steam hammers and for heating purposes only, it being cheaper for the company to buy its electric power from an outside concern. The equipment consists of two 100-horsepower and two 150-horsepower boilers built by the Erie City Iron Works, Erie, Pa., which are arranged to be fired by either gas or crude oil and to generate steam at a pressure of about 100 pounds. Gas fuel, being cheaper than oil, is used when available at a suitable pressure, but in the winter months, the gas pressure is so low it cannot be used to advantage. During the winter months, the exhaust steam from the hammers is used to heat the machine shop and other buildings; in the summer, it is returned to the boiler through a feed water heater. The furnaces are equipped with gas units and oil burners. By their use, a uniform pressure is maintained in the steam line, only two men are required to operate the plant, and a low temperature is had at all times in the boiler room.

The oil for use in the boiler room and furnaces is stored in four 10,000-gallon steel tanks and one 40,000-gallon concrete tank, located underground. From these tanks the oil is pumped under a pressure of from 11 to 14 pounds per square inch by means of two Burnham-type steam units and one motor-driven centrifugal pump. A deadweight governor valve is connected to the oil line and causes all the oil not used to return to the tank from which it was pumped. Before the oil reaches the burners it is driven through a special steam heater, in order to bring its temperature up to about 175 degrees Fahr.

It is believed that when maintained at this temperature, combustion is aided and the clogging of burners is prevented. Air is used to atomize the oil at the furnaces and steam is used to atomize it at the boilers. A two-stage air compressor, made by the Chicago Pneumatic Tool Co., New York, and driven by a 75-horsepower motor is used to furnish the air. This compressor has a capacity of about 540 cubic feet per minute. The plant is also equipped with two high-pressure blowers driven by 30-horsepower Westinghouse motors and having a capacity of about 2500 cubic feet per minute each, at a pressure of about 1½ pounds per square inch. A lubricating system installed by the Lunkenheimer Co., Cincinnati, for the steam hammers is located in the power plant. This is merely a steel tank 12 inches in diameter and 2 feet long in which the lubricating oil is stored under the pressure of the steam line. This pressure is sufficient to keep the oil moving to the various hammers and to automatically lubricate them.

News of Societies

Past and Coming Meetings of National and Local Trade and Technical Organizations

UNIQUE contests with a diversity of prizes featured the third annual picnic of the Cleveland Purchasing Agents association at Albers' Villa, Dover, O., July 24. The association which has a membership of 270 buyers and assistants connected with Cleveland concerns is affiliated with the National Purchasing Agents association of which F. L. Kulow, Willard Storage Battery Co., Cleveland, a member of the local society is president. C. R. Willson, C. O. Bartlett & Snow Co., was in charge of the outing arrangements as chairman of the committee.

The officers of the association are as follows: President, E. E. Juergens, National Malleable Castings Co.; vice president, S. T. Plimpton, Wellman, Seaver, Morgan Co.; secretary, A. G. Hopcraft, Ferro Machine & Foundry Co.; and treasurer, R. B. Tripp, the Ohio Forge Co. The directors are: H. E. Boppel, board of education; L. H. Norton, National Screw & Tack Co.; O. J. Blank, Peck, Stowe & Wilcox Co., and William A. Tubman, Theodore Kundtz Co.

* * *

Opposes Compulsory Metric System

In adopting a report of its committee on industrial developments, the Cleveland chamber of commerce recently placed itself on record as opposed to the compulsory adoption of the metric system in the United States. A collection of data regarding the system and the recommendations of the committee have been printed in a 16-page booklet. In making its report, the committee branded compulsory adoption of the metric system as disastrous. To illustrate the enormous cost of converting a large manufacturing plant to the metric system, the last three pages of the report carry a detailed expense account and an enumeration of the items to be considered.

* * *

Will Inspect Ford Blast Furnace

Members of the Cleveland Engineering society will be the guests of the Detroit Engineering society on Aug. 28, the Cleveland delegation going to Detroit by boat on the evening preceding. While guests of the Detroit society, an inspection trip will be made to the new blast furnace plant of the Ford Motor Co. More than 200 members from Cleveland are expected to make the trip. Reservations will be received until Aug. 18. H. C. Hale is chairman of the Cleveland Engineering society program committee.

Convention Calendar

Aug. 20-Sept. 3—American Institute of Mining and Metallurgical Engineers. Lake Superior meeting starting from Buffalo, Aug. 20, on the steamer Tionesta, visiting iron and copper country of Lake Superior district, returning to Buffalo, Sept. 3, on the steamer Juniata. Bradley Stoughton, 29 West Thirty-ninth street, New York, is secretary.

Aug. 26-28—Institute of British Foundrymen. Annual convention at Glasgow, Scotland.

Sept. 14-18—American Steel Treaters' society and Steel Treating Research society. Annual convention and exhibition, Commercial museum, Philadelphia. W. H. Eiseman, 208 N. Wabash avenue, Chicago, is secretary of the American Steel Treaters' society, and L. S. Carrick, P. O. Box 834, Detroit, is secretary of the Steel Treating Research society.

Sept. 21-22—(British) Iron and Steel institute. Autumn meeting at Cardiff, Wales.

Oct. 4-8—American Foundrymen's association. Annual convention and exhibition, Ohio state exhibition grounds, Columbus, O. C. E. Hoyt, Marquette building, 140 South Dearborn street, Chicago, is secretary.

Oct. 4-8—Institute of metals division of the A. I. M. E. Annual meeting with American Foundrymen's association at Columbus, O.

Oct. 11-13—National Association of Purchasing Agents. Annual convention at Chicago.

Oct. 19-22—National Hardware Association of the United States. Annual convention, Marlborough-Blenheim hotel, Atlantic City, N. J. T. James Fernley, 505 Arch street, Philadelphia, is secretary-treasurer

Business Studies Rail Situation

Confusion of Opinion Prevails as to Effect of the Wage and Rate Advances —Decline of Exports Excess Attracts Attention—Judge Gary's Views—General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

NO QUESTION has quite the current interest in the business community just now as that involving the effects upon prices and upon the entire industrial situation which may be expected from the railroad wage award and the forthcoming increase in railroad freight rates. The decision in the rate matter from the interstate commerce commission is anticipated by Aug. 1. Considerable confusion of sentiment is encountered when an attempt is made to analyze the importance of the railroad factor as an influence upon the business outlook.

In some quarters it is maintained that the present undisputed slackening in industry and trade is due chiefly to the traffic congestion, and it is but a step from this belief to the conclusion that clearing up of the rail situation would mean fresh stimulus to business activities. On the other hand there are those who point to the diminished demand for goods on the one hand and the accumulated stocks of goods on the other, due to the rail tie-up, and from this it is argued that the freer movement of goods to markets may hasten the tendency toward slower trade and falling prices. Still other observers brush both these opinions aside with the brusque comment that no improvement in traffic conditions is in immediate prospect.

Railroad Predictions Futile

Those who feel that the wage increase of $600,000,000 annually will result in no betterment in freight movements cling to the theory that the fundamental affliction of the railroads is the deterioration and shortage of equipment. To affect a physical rehabilitation of the roads and bring them up to a point in efficiency equal to the vastly expanded transportation needs of industry will require years, it is declared. As a matter of fact, predictions respecting just how the railroad tangle is to work itself out are next to futile. It is possible however that some increase in efficiency may result from the wage awards.

With unemployment growing in many industries throughout the country, and with 12,000 employes of the Pennsylvania railroad discharged and the policy of elimination being adopted by other roads, the work and wages that were scorned a few months since perhaps will become attractive once more. While it is self-evident that the car shortage is acute, it is certain that at least some of the congestion of the last few months has been occasioned by the lack of experienced men and the inefficiency of both old and new employes.

As reflective of the trend of events the report of June trade made last week by the department of commerce was of supreme interest. This report disclosed exports for the month at $631,000,000, while imports were $553,000,000. The excess of exports therefore was $78,000,000 as compared with an excess of $635,463,660 in June of 1919. Nothing could more strikingly indicate the tremendous change that has taken place in international trade within the space of one year. June exports dropped from the $928,379,000 of one year before and the $745,068,000 of May this year. At the same time imports climbed from $292,915,000 of June, 1919, and from the $431,004,000 of May this year. Little doubt is left, that the time is in sight when America will begin to pay the price of her vast creditor position with an inevitable adverse balance of trade. The effect this development will have upon domestic prices can not help being important.

Foreign trade figures for the 12 months ending with June also are interesting. The country's total of $13,349,000,000 was the greatest in its history, and compares with last year's total of $10,400,000,000. Exports for the year standing at $8,111,000,000 reveal a gain of 12 per cent, much less than the increase in prices, while imports standing at $5,238,000,000 show a gain over the previous year of 67 per cent. The balance of trade favorable to this country for the year was $2,872,000,000 as compared with $4,863,562,000 one year before.

Wall street attempted to seize upon the interview given out by Judge E. H. Gary before his departure for Europe last week as the means of stimulating public participation in a fresh stock market advance. The results were not encouraging and with the appearance of a slight deficit in the reserves of the New York clearing house banks' reserve together with a merely nominal improvement in the ratio of the federal reserve system's reserve position, Wall street sentiment has swung back to dull actualities. Judge Gary's remarks were full of optimism for the long future and this optimism was based on the belief that the present readjustment process was to proceed until the unhealthy elements of inflated credits, of excessive prices, and profits, and of inefficient labor are completely purged from the situation.

He is hopeful because he believes present tendencies are in this direction, and there is nothing in his interview to lend support to the theory of those who long for further inflation, and continuation of skyrocketing prices. The disposition, he says, is to decrease expenditures and to increase savings and "these tendencies during the next few months will be more and more noticeable." All signs point to larger production, lower costs, greater thrift, and more pronounced decreases in living expenses, he believes. These things can only be accomplished by stepping down out of the clouds of the existing abnormal postwar conditions.

Republic Shows Half Year Surplus Gains

Surplus profits of the Republic Iron & Steel Co. in the second quarter this year were $1,417,999, an increase of $528,183 over the first quarter, according to the company's financial report issued last week. This, added to the $889,817 reported for the first three months, made the first half year's surplus $2,307,817. Compared with the first half of 1919, this is an increase of $2,433,375 as the first six months last year gave a deficit of $125,858. As against the surplus of the second quarter last year, which had a deficit of $334,449, the corresponding period this year gained $1,752,449.

Unfilled orders on the books of the company at the end of the first half totaled 491,585 tons. At the close of the first quarter the tonnage was 512,451 and at the beginning of the year 486,379 tons. This achievement is somewhat similar to that of the

Lackawanna Steel Co., reported in *The Iron Trade Review* last week. Republic's second quarter performance for 1920, 1919 and 1918 are shown in the following table:

	1920	1919	1918
Net earnings*	$2,793,687	$ 952,770	$3,075,444
Other income	167,540	169,816	178,849
Total income	$2,961,227	$1,122,586	$3,354,294
Deprec. and renewals	364,301	343,778	573,606
Exhaustion of min.	107,855	80,467	86,364
Bond interest	183,571	178,425	18,551
Balance	$2,305,500	$ 510,916	$3,005,772
Pfd. divs.	437,500	437,500	437,500
Com. divs.	450,000	407,865	407,865
Surplus	$1,418,000	†$334,449	$2,160,407

*Net earnings after deducting charges for maintenance and repair of plants and provision for federal and excess profits taxes.

†Deficit.

For the first half this year, as compared with the corresponding perods in 1919 and 1918, the following is given:

	1920	1919	1918
Net earnings*	$5,146,707	$2,525,245	$7,203,174
Other income	280,413	370,787	433,176
Total income	$5,427,120	$2,896,032	$7,636,350
Depre. and renewals	763,121	798,548	1,069,861
Exhaust of min.	212,020	175,962	158,196
Bond interest	369,162	356,850	380,752
Balance	$4,082,817	$1,564,872	$6,027,540
Pfd. dividends	875,000	875,000	875,000
Com. dividends	900,000	815,730	815,730
Surplus	$2,307,817	†$125,858	$4,336,810

*Net earnings after deducting charges for maintenance and repairs of plants and provision for federal and excess profits taxes.

†Deficit.

Youngstown Car Seeks Working Capital

Additional working capital is sought by the Youngstown Steel Car Co. in offering to the public $600,000 of common stock at $25 par, according to William Wilkoff, president. The company's authorized capitalization is $5,000,000, $2,000,000 of which is preferred and $3,000,000 common. Of this, $787,337 common and $29,300 preferred is outstanding.

The balance sheet as of May 30 shows net assets of $820,220.06, or approximately 104 per cent on the stock. There is no funded debt. Aggregate current assets as of May 30 were $690,763.66 and current liabilities $695,690. Proceeds of the stock offering in addition to payments on subscriptions of previous offerings to the aggregate amount of $68,462.50 yet to be made, will give the company a net working capital of about $700,000.

Net earnings for May were $16,078.84, and for the first five months of the year $31,808.38. These earnings are based on $200,000 capital, all that had been actively employed in the business. Annual earnings have been as follows: 23.8 per cent in 1916; 14.7 per cent in 1917; 23.2 per cent in 1918 and 20.2 per cent loss in 1919. The 1919 loss arose from the paralyzed condition of railroad car business due to refusal of the railroad administration to engage in anything but imperative car rehabilitation. Due chiefly to this condition the company's business was reduced in 1919 from a previous normal annual rate of about $1,000,000 to $335,000.

May Buy Ohio Concerns

New York, July 24.—The E. W. Bliss & Co. have plans under way to purchase substantially all of the plant and machinery of the Cleveland Machine Mfg. Co., Cleveland, and the Buckeye Engine Co., Salem, O. Directors of the Bliss company have called a special meeting of stockholders for Aug. 11, to act on a plan toward providing for the recapitalization of the company's finances in order to effect the purchase.

Stockholders will be asked to approve the issuance of 300,000 shares of common stock, without par value and without voting rights; to authorize the issuance of 30,000 shares of first preferred stock, par $50, such stock to have the same rating as the present $1,500,000 cumulative preferred stock; to approve of the issuance of 40,000 shares of second preferred, $50 par to be known as second preferred stock, class A, such stock to have preference over the common and second preferred class B. This class A preferred stock is entitled to 7 per cent cumulative dividends, following the first preferred, but without voting power except when dividends have been passed for one year; to authorize the issuance of 30,000 shares class B preferred par value $10, with the same voting power as the present common. It will be entitled to cumulative dividends at the rate of 6 per cent per annum, and to authorize the exchange of the present preferred, of which there is $1,250,000. $50 par value, outstanding for the new 30,000 shares first preferred, also $50 par, on a share for share basis.

To approve of the exchange of all the present common stock for 300,000 shares of new no-par value non-voting common, and 30,000 shares of the new class B second preferred, with voting power, on the following terms: Every holder of the common stock will be entitled, upon surrender of his common shares, to receive 10 shares of the second preferred class B for each share of common surrendered by him.

Also to authorize the directors to issue the 40,000 shares of class A 7 per cent, second preferred from time to time, for such consideration as they may deem to be for the best interest of the company.

Acquire Steel Foundry

New York, July 26.—New York interests controlling the American Chain Co. have organized the Reading Steel Casting Co., with an authorized capital of $2,500,000 of preferred stock and 25,000 common shares of no par value, under the laws of New York state, and the latter company has purchased the business and assets of the Reading Steel Casting Co., Reading, Pa. The officers of the new company are: Chairman, W. D. Lasher; president, J. Turner Moore; treasurer, E. L. King; secretary, M. G. Moore. The five officers, together with W. F. Wheeler, comprise the board of directors. The executive headquarters of the new company will be located in the Grand Central Terminal building, New York, where the American Chain Co. has its headquarters.. The plant at Reading will be operated along the same lines as before.

Reports First Earnings

The Motor Wheel Corp., Lansing, Mich., in the first three months of its existence, ending May 31, last, through its treasurer, B. S. Gier, reports net earnings of $334,849.47. After deducting federal taxes estimated at $69,765.28, there was available for the stockholders net profits of $265,084.19. The company, capitalized at $11,000,000, is a consolidation of four motor car wheel manufacturers, the Prudden Wheel Co., the Weis & Lesh Mfg. Co., the Gier Pressed Steel Co., and the Auto Wheel Co.

Financial Crop Ends

THE Taylor-Wharton Iron & Steel Co. has declared the regular quarterly dividend of 1¾ per cent on preferred stock, payable Aug. 2. Books closed July 24.

* * *

The Union Tank Car Co.'s quarterly dividends of 1¾ per cent each on preferred and common have been declared, payable Sept. 1 to holders of record Aug. 5.

* * *

The regular quarterly dividend of 1½ per cent on common stock has been declared by the Sloss-Sheffield Steel & Iron Co., payable Aug. 10. Books closed July 28.

* * *

Earnings of the Nova Scotia Steel & Coal Co., Ltd., for the first four months of 1920 are reported to have been $490,502 as compared with $463,493 for the corresponding period last year.

Labor Efficiency Is Increasing

Forty-nine Manufacturers in 40 Lines of Industry in New York so Report, Giving as Reasons the Growing Number of Applicants and Change from Time to Piece Work—"Change Is Not Remarkable, but Unmistakable", Association States

NEW YORK, July 26.—Efficiency of labor is increasing, according to reports from 49 manufacturers operating in 40 different lines of industry in New York City. Normal efficiency, however, has not yet been reached. The manufacturers reporting are the same ones who in September, 1918, declared that labor in general then was not more than 70 per cent efficient, judged by normal standards. This information is contained in the following statement just made public by the industrial bureau of the Merchants Association of New York:

"Although production per man per hour has not yet reached normal, it has been gradually improving since last September, especially during the last four or five months, and a spirit of optimism regarding the productivity of labor is now prevalent among manufacturers.

"It is not possible to measure the increase in output on a percentage basis except in special cases, and it cannot be said that the increase is as yet remarkable, but the testimony is unmistakable that a change for the better is now well under way.

"Of the 49 manufacturers who reported, 23 say that the efficiency of their employes has increased noticeably since last September; five say that although they have seen no measurable increase, they sense a better spirit among their employes; 17 say that they have observed no change, and three say that they have noted a decrease. One manufacturer reports that it is his observation that labor efficiency is increasing in many lines of industry, although he has available no specific data for his own plant.

"The reasons given for the present tendency toward increased productivity per man are varied, but those most frequently cited are the increase in the number of applicants for positions and the change from time work to piece work.

"Some manufacturers report also that there seems to be a better class of labor available, and two or three make this statement particularly in reference to female labor. One manufacturer says that a decided increase in individual efficiency occurred in his plant following a change from a closed shop to an open shop policy. Another manufacturer reports as follows:

"'We have until the past two months been running under strained conditions, due to a large percentage of our help being affiliated and under union rules. We have had a six weeks' shutdown through this. Since then a complete change has taken place. We can say today that our percentage of increase in production has now reached between 30 and 40 per cent, with a tendency to further increased production.'"

The following statements giving reasons for increasing production are made by manufacturers in the stove, drop forging, ink, publishing and clothing lines:

"At the present time we find that the conditions are far better than they have been for some time past and this applies to all of the various departments. This is due largely, we believe, to closer supervision and better class of workmen which has been brought about due to the fact that we have not had such a large turnover recently as we had some time ago. All of the companies in these lines that reported agreed that the class of labor that has been obtainable for the past month or more is considerably better than that available for many months past. It still is difficult to secure skilled help but common labor is more plentiful. One company reports it has a 20 per cent betterment in production as compared with September, 1919."

A manufacturer in another line says: "The fact that there has been a slight increase in the productivity of labor is in no sense, in our opinion, due to the conscience-stricken feeling that may have pervaded labor, but rather to the prevalent dullness through which all industries are now passing. This condition has finally been driven home to labor, which realizes that its intolerant attitude will no longer prevail. The reason to which we attribute the slight increase in production is because of the fact that we have changed from week work to piece work in several of our departments, and from a manufacturing point of view, week work encourages soldiering, while piece work prevents it."

Several manufacturers in effect, say: "In all departments that we have inaugurated the piece work system the output is entirely satisfactory but the output on time labor is fully 30 per cent below normal.

"Insofar as our skilled piece work labor is concerned, we are pleased to report that normal efficiency now prevails. We find that indifference exists among the ordinary time workers, who, while they are receiving what we believe is good pay in our plant and perhaps better than paid in some others, are nevertheless inclined to be indolent."

The general situation is reflected fairly accurately by the following statements from manufacturers in the oil, printing, clothing and typewriter industries:

"We have noticed a decided improvement in the frame of mind of our labor in the past few weeks. Exactly how this will develop we cannot state at the moment."

"I believe I can sense a sentiment among the men which I am in hopes will lead to a greater production."

"Our works superintendents have the feeling that there is a better spirit of loyalty and attention to work in our plants at the present time than existed some months ago. At one of the works the superintendent reports that the improvement is noticeable. We have not, however, figured any improvement in output in per cent, but we are inclined to hope that our works employes are beginning to feel less restless and more disposed to look upon regularity of work and reasonable efficiency as something which should have their consideration."

"We have not got available figures at hand on the subject, but estimate that labor is about 75 per cent efficient at the present time, with conditions gradually improving."

Largest Employment Gain in Iron and Steel

Statistics relating to employment in 13 selected manufacturing industries, compiled by the bureau of labor statistics, United States department of labor, show that the number of employes on the payroll of iron and steel companies increased 5.3 per cent in June as compared with the number in May. This increase was the largest of any in all the industries. The number in May was 173,833, and in June, 183,004. In May $13,248,900 was paid in wages, and in June, $14,213,114, an increase of 7.3 per cent. These figures relate to 114 establishments reporting in both months.

For the year ended with June there was an increase of 12.9 per cent in employment in the iron and steel industry as compared with the previous year. Wages increased 40.9 per cent, the largest increase in the 13 industries except for the followig: car building and repairing, 41.1 per cent; men's clothing, 99.7 per cent; paper making, 57.4 per cent, and bituminous coal mining, 48.1 per cent. The comparative figures for the two years for the iron and steel industry relate to 113 establishments which reported in the two successive periods.

Coincide with the announcement of these statistics, the bureau also shows that the index numbers of wholesale prices of the principal com-

modities in the United States fell from 272 in May to 269 in June, 100 representing the average price in 1913. Metal and metal products dropped from 193 to 190. An increase of 23.4 per cent is shown in the price of these products fo. year ended with June as compared with the price in the previous year.

Puddling Rate Higher

The puddling rate for July and August has been advanced from $14.88, the May and June basis, to $17.26 a ton, according to the bimonthly settlement between the manufacturers and the Amalgamated Association of Iron, Steel and Tin Workers. This settlement is on a 3.25c card while the former was on a 3.00c card. The new rate would have been $16.12 a ton except for the 15 per cent advance on a 0.50c card and above, which added $1.14 a ton.

LABOR NOTES

THE Lakewood Engineering Co., Lakewood, O., has made provision for the purchase by some 400 employes of a large block of its new issue of 8 per cent, cumulative, participating, preferred stock. The stock will be offered to employes under a partial payment plan.

The Union Steel Casting Co., Pittsburgh, recently bought several building lots in Aspinwall, Pa., and plans to erect 20 houses to be sold to employes at cost. The Union Steel Casting Co.'s plant is just across the Allegheny river from Aspinwall, where a number of its employes already reside.

Employes of the General Electric Co., at Schenectady, N. Y., are organizing to conduct a co-operative store. More than 1000 of them already have pledged to buy the $10 certificates of membership. When the number reaches 2000, steps will be taken toward co-operative merchandising. The merchandise is to be sold at current prices, the benefits to the members being in the form of rebates their shares will earn.

Demands for wage increases made by striking machinists of the Savannah, Ga., shops which are members of the Ironmasters' association, will not be granted, and the men have been given one week in which to return to work. The following shops are effected: John Rourke & Sons, Wilkinson Machine Co., Forest City Machine Co., Mingledorff & Co., Robinson Special Machine Works, Southland Steamship Co., and the John J. McDonough shop.

The 3,500,000 workmen involved in strikes, lockouts and other labor controversies in the year ended June 30, 1920, lost about $175,000,000 in wages, the department of labor estimates. This is predicated on an average daily wage of $5 and an average strike duration of 10 days. The steel strike is given first place in last year's labor difficulties, with railroad strikes a close second. The department estimates the cost of the steel strike was $3,000,000 a day. Strikes so far this year have been more infrequent but much more difficult to settle, the department states.

Rename Worcester Works

The name of the plant of the former Spencer Wire Co., in Worcester, Mass., now controlled by the Wickwire Spencer Steel Corp., has been changed from the Webster street works to the Goddard works, in honor of Harry W. Goddard, chairman of the board of directors of the corporation, and president and treasurer of the Spencer Wire Co., which still retains its corporate existence. Mr. Goddard founded the plant in 1899. The change in name is in line with the policy of the corporation which has been followed in the three other works, of honoring the original founders, these being the Wickwire works, Buffalo and the Wright and Morgan works, in Worcester.

Mill Equipment for India Bought in Pittsburgh

That foreign buyers still are interested in rolling mill equipment manufactured in the United States is shown by an order placed recently with Mackintosh, Hemphill & Co., Pittsburgh. The order calls for 12 stands of 28-inch hot mill rolls and 12 stands of 24-inch cold mill rolls for rolling black plate for tinning purposes at the new plant of the Burmah Oil Co., Ltd., Jamshedpur, Bengal, India. Mackintosh, Hemphill & Co., recently completed shipments on a 27 x 42-inch universal mill for the Dominion Steel Foundries Co., Hamilton, Ont., and now has under construction a 32 x 46-inch universal mill for the Scho plant of the Jones & Laughlin Steel Co., Pittsburgh.

The American Chain Co., of New York, which has absorbed the Reading Steel Castings and Reading Valve Co.'s, of Reading, Pa., is preparing to enlarge the force of employes.

Warn of Coal Famine in New England

"Unless the New England states can obtain quick and effective relief from the interstate commerce commission or by executive action of the President to overcome the present traffic congestion our six states will be face to face with the worst steam coal crisis in their history. It will be much worse and more dangerous than during the war." Such is the conclusion of the official representatives of all the New England states embodied in a report of recent investigations submitted to the governors of the states.

The report states that New England must have at least 25,000,000 tons of bituminous coal to burn during the year April 1, 1920 to April 1, 1921. The present rate of movement means a shortage of 6,400,000 tons "to be borne wholly by our manufacturing establishments." These establishments it is said, "will have only enough fuel to keep them going on half time, probably beginning with the early fall."

The report declares that "Coal amounting to 8,000,000 or 9,000,000 tons has been running smoothly since April 1 "to the three leading railroad piers for export, and it is asserted that this export trade not only is blocking the domestic traffic but depleting the supply for New England consumers. The coal is not diverted to the home market becaue the operators are charged with preferring the foreign trade because they are receiving fabulous prices. It is said that the operators "are throwing dust in the eyes of the public" and concealing from it the menace to this country lurking in this heavy export trade. The commerce commission has been asked to exercise its authority and order more coal sent into the New England market.

Not only is the future dark, as regards supplies, it is pointed out, but present prices are "exorbitant." industries are required to pay from $18 to $23 a ton for coal. "When to this price of $18 is added the expense of bringing it by vessel to New England and the unloading charges, it brings the cost of this coal to above $22—even if we leave out a fair commission to the dealer, the inland New England freight charge and several minor charges." Continuing, the report states: "There is no question in our minds that if definite constructive relief cannot be obtain price of coal in New England is going to advance much further than the high prices which already exist."

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

JAMES H. SMITH, managing director of the Wellman Smith Owen Engineering Corp., Ltd., London, England, is on a visit to this country in connection with extending and broadening the lines of manufacture engaged in by his company. He is well known in English shipping and steel circles and his company is rated as one of the largest contracting engineering firms in iron and steel works equipment in Great Britain. Mr. Smith is alive to the possibilities of the world's markets and came to this country to obtain first hand information as to the various lines of American machinery, which his company can market advantageously in England and other European countries. The Wellman Smith Owen Engineering Corp. is closely allied with the Wellman-Seaver-Morgan Co., of Cleveland.

Arthur Corbeille has assumed the management of the W. L. McCullough Foundry Co., of Ypsilanti, Mich.

W. E. Freeman has been appointed director of commercial training of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

F. Spencer Goodwin has been elected treasurer of the Collins Co., Collinsville, Conn., succeeding Meigs H. Whaples, resigned.

Frank A. Chase Jr., vice president of the Robbins Co., Attleboro, Mass., has been elected general manager to succeed Frederick Schwinn, resigned.

George E. Wood has been appointed superintendent of the Southington, Conn., branch of the Stanley Rule & Level Co., New Britain, Conn.

Ward A. Miller has been appointed manager of distributors' division of general sales department of the Midvale Steel & Ordnance Co., succeeding the late Edward Price, Jr.

Marcus A. Coolidge, president of the Fitchburg Machine Works, Fitchburg, Mass., has been mentioned for the Democratic nomination for governor of Massachusetts.

G. O. Noble has been appointed special representative at the Los Angeles office of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., while G. B. Kirker has been appointed manager of the railway division and R. A. Hopkins, manager of the power and marine division, both with headquarters at Los Angeles.

W. C. McKee, formerly of the Wellston Steel & Iron Co., Wellston, O., now is in charge of the Pulaski Iron Co. furnace at Pulaski, Va.

Thomas H. G. Pierce, who recently resigned as master mechanic for

JAMES H. SMITH

Eaton, Crane & Pike, Pittsfield, Mass., has been appointed factory manager for the Erie Bolt & Nut Co., Erie, Pa.

C. B. Durham, works manager of the Buick Motor Co., Flint, Mich., has been appointed assistant to the general manager of the company's Chicago properties.

Albert W. Walker, foreman of the foundry department of the Howard & Bulough American Machine Co., Pawtucket, R. I., has recently resigned his position to accept a similar position in Elmira, N. Y.

E. H. Heumann, formerly of the chemical department of the Crown Cork & Seal Co., Baltimore, has accepted a position on the staff of Daniel M. Luehrs, Cleveland, as chemist in charge of chemical laboratories.

Albert L. Wiley Jr., for the past three years connected with the credit department of the Norton Co., Worcester, Mass., has been transferred to Detroit, to take charge of credit work in that branch. He will assume his new duties Aug. 1.

L. D. Canfield, assistant district service manager at the New York office of the Westinghouse Electric & Mfg. Co., has been appointed district service manager to succeed L. G. Richards, who has been transferred to East Pittsburgh, Pa.

Frank Moran, who has been in charge of the coke works of the Brier Hill Steel Co., Youngstown, O., since the plant was started, has been made superintendent of the Western Reserve mill, succeeding A. E. Hughes, resigned. Edward A. Phelan, formerly assistant superintendent of the Haselton works of the Sharon Steel Hoop Co., has been made assistant superintendent of the Western Reserve mill, and George Williams who was assistant to Mr. Moran at the coke works, has been promoted to superintendent to succeed Mr. Moran. The changes became effective immediately.

J. M. Larkin, assistant to the president of the Bethlehem Steel Co., Bethlehem, Pa., and one of that company's directors, was unanimously chosen head of the Industrial Relations association of America at its annual meeting at Atlantic City, N. J. Mr. Larkin has had charge of the representation plan in effect at the plants of both the Bethlehem Steel Co., and the Bethlehem Shipbuilding Corp. Mark M. Jones, director of pensonnel of the Thomas A. Edison Industries, Orange, N. J., whose resignation as executive secretary was accepted, effective Sept. 15, was elected vice president. F. C. Parker, was re-elected secretary for the second time. W. H. Winans, of the Union Carbide & Carbon Co., New York, was made treasurer. For the present the administrative offices will remain at Orange, with E. A. Shay, the assistant secretary of the association, in charge.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

COL. EDWARD B. ELLICOTT of the chemical warfare service of the United States army has been discharged after two and a half years' service and has become associated with A. M. Castle & Co., iron and steel merchants, Chicago, as chief engineer. He will be in charge of the erection of the new plant of A. M. Castle & Co., of Washington, at Seattle and of additional buildings at Chicago. In addition he will be in charge of the operating and manufacturing activities of the company and its associated interests. During his war service Col. Ellicott was in charge of building general hospital No. 3 at Colonia, N. J., and the building and operation of the poison gas plant at Edgewood, Md., one of the largest and most complicated war projects undertaken by the government. Previous to his war activities he was city electrician of Chicago for eight years and chief electrical engineer for the sanitary district of Chicago for 11 years. He was granted a leave of absence from his Chicago duties to act as chief mechanical and electrical engineer for the Louisiana Purchase Exposition at St. Louis. He is a member of the American Society of Engineers, Western Society of Engineers, American Association of Engineers and a fellow of the American Institute of Electrical Engineers.

Rene J. Brault has resigned as superintendent and master mechanic of the Plainville, Conn., branch of the Standard Steel & Bearings, Inc., to engage in business for himself under the name of the Plainville Engineering & Supply Co.

Carl F. Rittscher of the export department of the American Hardware Corp., New York, has returned from a trip of three and a half years through South America in the interests of the Russell & Erwin division of the corporation, New Britain, Conn.

H. F. Hanks was appointed manager of the wire fence department of the Pittsburgh Steel Co., Pittsburgh, on July 1, to succeed H. J. Miller, who was promoted to be secretary of the company. Mr. Hanks has been affiliated with the Pittsburgh Steel Co. since 1910. For several years he represented it in the southern and Pacific coast states as salesman. After an absence of two years, devoted to military service in the United States army, he returned to assume his sales activity from the Chicago office, calling upon the jobbing and manufacturing trade.

Charles H. Breed, until recently metallurgist of the Crown Cork & Seal Co., Baltimore, has joined the staff of Daniel M. Luehrs, industrial consulting engineer, Cleveland consulting metallurgist, and will have charge of the metallurgical laboratories.

Francis X. Wholley of the United Shoe Machinery Corp., Boston, has been appointed director in charge of the Washington, better business bureau, a branch of the work which has been developed by the Associated Advertising clubs of the world. He is a director of the Boston Better Business bureau.

Carl M. Beattie has been elected president of the Empire Tube & Steel Corp., College Point, N. Y., to succeed William C. Lange, whose tenure in the office of president and general manager, recently expired. John Fraser continues as vice president and Edwin S. Morgan, as secretary and treasurer of the company.

Andrew M. Peterson, president of the Brooklyn Foundry Co., Brooklyn, N. Y., has been designated as republican candidate for congress to represent the ninth congressional district in Kings county, New York. He is without opposition on the republican ticket, and his chances for election are exceedingly bright.

R. C. Trig, formerly connected with the Berger Mfg. Co., Canton, O., has become associated with the National Pressed Steel Co., Massilon, O., in the capacity of chief engineer of the sales promotion department. Mr. Trig has been intimately associated with the development of steel lumber sections since they were first introduced to the building industry in 1905.

William Grant, who during the war was associated with Lucien I. Yeomans in the engineering department of the Amalgamated Machinery Corp., now is works manager of the Lansing Foundry Co., Lansing, Mich. Between November, 1917 and April, 1920, he was foundry superintendent of the Rock Island Mfg. Co., Rock Island, Ill. George Estes, formerly with the Ocala Iron Works, Ocala, Fla., has been appointed general foreman of the Lansing plant.

C. L. Wooldridge, engineer in charge of construction of the homes for employes of the Carnegie Steel Co., has been appointed a member of the Pittsburgh board of education succeeding Taylor Allderdice, of the National Tube Co., who recently resigned.

Dr. Frederick G. Cottrell, recently nominated to be director of the bureau of mines, department of interior, has been awarded the Willard Gibbs medal by the Chicago section of the American Chemical society. This prize, named for a distinguished American scientist, was founded by William A. Converse, of Chicago, and is conferred "in recognition and encouragement of eminent research in theoretical and applied chemistry."

C. Harold Wills, formerly chief engineer of the Ford Motor Co., Detroit, has been elected president of the newly organized C. H. Wills & Co., which will manufacture automobiles, at Marysville, Mich. John R. Lee, formerly production manager of the Ford company, Kirkland B. Alexander and Charles Morgana, were named as vice president of the company, while Frank P. Book was named treasurer, F. D. Stone, secretary and George S. Anderson, assistant secretary-treasurer.

L. L. Arnold and H. J. Woodmansee, both of Buffalo, have been appointed assistants to President T. Harry Wickwire, Jr., of the Wickwire-Spencer Steel Corp. Charles C. McDonald, Buffalo, has been made assistant secretary and Raymond Jay Southwell, New York, has been named as sales agent in charge of the New York office. Harry W. Goddard, chairman of the board of the Wickwire-Spencer corporation, left Worcester on July 10 for Seattle, to join a party of capitalists for a 3-month trip to Alaska.

New Rate Plea Delays Decision

Railroad's Request for 20 Per Cent Increase in Passenger Rates To Help Meet Wage Raise now Considered, but Freight Advance Is Likely To Be from 30 to 35 Per Cent—Commission To Investigate Bankers' Interest Charges

WASHINGTON, July 27.—Final decision by the interstate commerce commission on the increase in rates to be made effective Sept. 1 has been delayed by the proposal of the railroad executives that passenger fares be pushed up 20 per cent, but the forecast of a freight rate advance in the neighborhood of 35 per cent still holds good. The railroad executives themselves have about-faced on their original proposition of making freight traffic bear all or nearly all of the $600,000,000 wage increase, and have now asked for a grand total increase in freight rates of 36.6 per cent. If the commission does any paring of the original estimate of $1,107,000,000 revenue needed for the 6 per cent guarantee the freight rate rise may be nearer 30 than 35 per cent. Leading shipping interests are bringing much pressure to bear, however, toward a heavy increase on passenger fares. Many members of the commission, on the other hand, are averse to this as an economic proposition. The best estimate at this time is that freight rates will go up 30 to 35 per cent, passenger fares in the East to 3½ cents a mile and passenger fares in the West to 4 cents. The commission's decision is believed to be not over a week distant.

Complaints are coming in daily to the commission regarding crises at various plants because of service order No. 7, which has now begun its 30-day extension, but the commission is firm that the order shall run at least until Aug. 20. Fuel is now the primary consideration of the commission, as service order No. 10, directing certain mines to ship stated percentages of their output to the Great Lakes coal pool, indicates. Service order No. 11, doing for New England what order No. 10 is doing for the Northwest, is understood to be in course of preparation. It is thought probable that all coal exports will be forbidden, thus giving domestic consumers a larger coal supply. Acceptance of the wage award of the railroad labor board has temporarily quieted fears of the commission that the carriers' troubles will be further augmented by strikes. It is recalled that Daniel Willard, chairman of the advisory board of the Association of Railway Executives, told the commission recently that four to six weeks after the decision was handed down congestion would be very materially reduced. It develops that inasmuch as the government's six-month guarantee of railroad revenues runs to Sept. 1, the whole burden of the retroactive clause of the award falls upon the government. The $200,000,000 additional to be paid railroad labor from May 1 to Sept. 1, when the higher freight and passenger rates will throw the burden more directly upon the public, will come out of the treasury and will not be repaid by the roads.

Beginning July 29, the commission will investigate high interest charges demanded of the railroads for loans with which to purchase new cars and locomotives. The commission stipulated that as it loaned the carriers funds from the $300,000,000 revolving fund of the transportation act the carriers would have to advance stated sums. The carriers are complaining they cannot match loans promised by the government, because of interest rates bankers seek to exact, and as a result no more applications for financial help for the purchase of equipment have been approved.

Some concern is expressed at the apparent attempt of Samuel Gompers, president of the American Federation of Labor, to inflame railroad labor and to prod railroad executives for alleged lack of ability in operating the roads. In his criticism of management Gompers said:

"The country wants to know how this increase is to be met. The problem of how to come this near to an adequate wage is one that is causing all manner of authorities and would-be authorities to gasp in amazement and to hunt for a solution. This clamor and speculation is an evidence of the intellectual bankruptcy of railroad statesmanship and of railroad operating genius. It does not seem to have occurred to either the government or the railroads that it might be possible to increase railroad operating efficiency to a point that would eliminate the extra cost. Let operating brains be put to work and the solution of the railroad problem will be found. The answer is not in levying taxes. It is in real railroading."

Commission Delays Action Till October

WASHINGTON, July 27.—With the filing of its formal answer to the injunction obtained by the Bethlehem Steel Co., Republic Iron & Steel Co., and 20 other iron, steel and coke producers, the federal trade commission has suspended its production-cost data campaign until October. Stung by reports that it would seek to have the injunction modified by some other justice than Justice Bailey and claiming to be quickened by a desire to re-establish itself in the good will of the iron and steel industry, the commission will rest all action until the return of Justice Bailey to the bench some time in October.

October, it will be recalled, is the month in which the trade commission originally hoped to have its mandamus suits at Philadelphia and Trenton, N. J., against the Bethlehem and Republic companies, respectively, ready for appeal to the United States Supreme Court. Appeal in October and a motion to advance the case for early hearing would bring by January or February, 1921, a final decision on the commission's authority to compel the submission of private production-cost data, the commission felt. Now, it will be October before the commission will ask the lifting of the ban so the mandamus suits can be prosecuted. Then, were the commission successful, it would be some time before the suits could be heard and appeal made to the Supreme Court. A decision by this high court before a year from January would be unlikely. With the filing of production-cost reports wholly on a voluntary basis pending the final ruling by the Supreme Court, this would seem to be substantially abandonment of the commission's campaign.

The commission, however, is of a different mind. No matter if the commission were to win every round of its legal battle, it would not accomplish its purpose until it had obtained the co-operation and good will of the

industry, members claim. Between now and October, the complexion of the case may be completely changed, it is felt, and prosecution of the Bethlehem and Republic suits made unnecessary. Members of the commission are convinced that once they win iron and steel producers over to their viewpoint, satisfy them that price-fixing is not the motive, and that good will will result from a study of production costs, the producers will effect a working agreement with the commission.

In its formal answer to the injunction granted in June to the 22 iron, steel and coke producers, halting further court action by it, the trade commission upholds its right to issue the cost questionnaires and asserts that like the interstate commerce commision, it has authority to require producers to report on both intrastate and interstate business when the same equipment is used in both. In an official synopsis of the answer put out by the commission the following statement was given out.

"Because no imposition of penalty is threatened, and there is no likelihood of a multiplicity of suits, the commission asks that the bill of complaint be dismissed, and if this is not done the commission asks that the bill be dismissed as to the Bethlehem Steel Co. and the Republic Iron & Steel Co. for the reason that they are not proper complainants to this bill and that this court is without jurisdiction to grant them relief because of the previously acquired jurisdiction of the United States district court, and finally, if neither of these two prayers is granted, the commission asks that any decree which may be made will clearly exclude the prosecution of mandamus proceedings by the attorney general against the Bethlehem Steel Co. and the Republic Iron & Steel Co."

President Scrutinizing Coal Situation

WASHINGTON, July 27.—Official Washington is leaning over backwards in its attempts to give assurance that government control of coal and coke is not being considered at this time, yet increasing interest in the situation at the White House and the department of justice makes the trend unmistakable. More careful scrutiny of the fuel situation was given at the White House last week than at any time since the crisis became apparent, and the President is the one man in the United States today with power to regulate coal and coke prices. The department of justice still maintains it cannot lower prices except by the enforcement of the Lever act against profiteers, but it is significant that Attorney General Palmer attended today's session of mine operators, exporters and railroad executives at New York as the "ear of the President." The interstate commerce commission is expected to give priority to New England coal similar to that given to the Northwest. Possibly, a ban will be placed on all exports. If these measures, augmented by an expected increase in railroad efficiency because of the labor board's award, do not ameliorate the shortage, and the coal operators themselves do not bring down prices, then a fuel administration and maximum prices may be regarded as certainties, it is felt here.

Already some dissatisfaction is being evidenced over the action of the commerce commission in regard to the Northwest and New England coal priority orders. Some interests feel the commission is making the same mistake the old railroad war board did just prior to government control, in issuing these priority orders. If the commission does not cease promulgating the orders and stop recommending to the car service commission of the American Railroad association that certain plants be favored as to car supply, the railroads soon will have more priority commodities than they can handle, and the commission will defeat its own end, is the criticism made. The commerce commission appears to be the one governmental body that stands between the coal and coke industry and government control, and for that reason its use of its emergency powers will bear watching. So far no action has been taken by the commission in regard to coke and it seems that none will be at this time as the coal situation overshadows everything else. The department of justice still insists it has had no complaints as to high coke prices and declares that such protests as may be lodged will be referred back to the local district attorneys for investigation.

While government agencies outwardly are averse to even discussing the possibility of government control, bituminous coal interests are not blind to the situation. The largest representation of bituminous coal operators is in the National Coal association, and a few days ago its vice president, J. D. A. Morrow, said:

"The coal industry is at a crossroads. It will either go forward along the splendid pathway of individual enterprise and initiative or it will find itself treading the rocky pathway of everlasting governmental regulation and control. The ability of private enterprise in this business and private enterprise in the management of the railroads is faced with a test of its sufficiency. Failure to coal the northwest and New England would justify federal control, which would be fastened upon the coal industry permanently."

Extend Can Order

Washington, July 20.—The order whereby certain can makers have been granted an extra allotment of box cars in order to meet the seasonal need of the canning industry has been extended to July 25, it was stated today at the commission on car service of the American Railroad association. Though it is expected that tin plate makers will ask that their car preference order be reinstated, the car service commission says that at this time tin plate makers are on the same basis as the rest of the iron and steel industry.

Labor Shortage Slows Up French Iron Mining

Washington, July 27.—French production of iron ore in January was 990,495 metric tons, in February 974,847 and in March, 118,773, making the production for the first quarter of 1920, 3,084,115 metric tons. Because of strikes, iron ore production in April fell to 613,028 tons. Revised figures on the 1919 French iron ore production place it at 9,429,689 metric tons, of which 91.2 per cent, or 8,606,000 tons, came from the Lorraine basis. In 1919 France imported 303,295 tons of iron ore and exported 1,697,171 tons.

The department of commerce further says, concerning the French iron ore industry: "It is reported that the iron ore mines were particularly handicapped in 1919 on account of the shortage of labor, this district employing an important percentage of foreign laborers, who had not returned after the ending of the war. The stocks in hand at the several mines during the year is given as about 4,200,000 tons. Due to the lack of cars, it was not always possible to transport the ore on hand, which resulted in a slowing down in the production."

Washington, July 20.—Dundee, Scotland, has decided to buy steel tramway rails from an American maker at $118.25 a ton, delivered. The best English bid was $138, delivered, according to the department of commerce. The order is to be for 1000 tons.

Coal Output Makes Good Gain During Week

In addition to the department of justice and the interstate commerce commission, the department of labor and the navy department are keeping close watch upon the fuel situation. Conciliators of the department of labor are in the Illinois strike belt, seeking to get the strikers back to work as soon as possible. They are spurred on by the knowledge that if the bituminous coal commission's wage award is revised for the Illinois field it must be revised for the central competitive field or a general coal strike will be threatened. The navy, through its efforts to purchase fuel for the Pacific fleet from western sources, is also seeking to batter down prices. Production figures of the federal geological survey for the week ended July 17, the latest available, place the total bituminous coal output in that week at 10,969,000 net tons, compared with 9,616,000 tons in the week preceding and 9,889,000 tons in the corresponding week of 1919. For Jan. 1 to July 17, bituminous coal production totaled 282,945,000 net tons, compared with 238,213,000 tons in the same period of 1919. This is taken to indicate that there is no actual coal shortage at the mines and that the fault at present lies mainly in the distribution.

To Erect Electric Steel Plant in Brazil

Corning & Co., 165 Broadway, New York, have a contract by which their subsidiary, the Corning International Corp. will erect an electric steel plant in Brazil for the Companhia Electro Metallurgica Brazileira. This plant will have a capacity for producing from iron ore, 50 tons of pig iron a day, from which steel bars will be rolled in the smaller sizes. The complete cost of the plant is expected to be approximately $1,000,000.

More Buying

Reported in Benzol and Solvent Naphtha—Demand for Toluol

New York., July 26.—Sellers of benzol and solvent naphtha are booking future business more freely, although they are considering little beyond three months. This is a result of a slight improvement in production and transportation. Prices are holding steady, with pure benzol quoted at 35 cents, f.o.b. works, in tanks, and 37½ to 40½ cents in drums, 90 per cent benzol at 33 cents, f.o.b. works, in tanks, and 35½ to 38½ cents in drums, and solvent naphtha at 30 cents, f.o.b. works, in tanks, and 32½ to 35½ cents in drums. Toluol remains plentiful, with demand rather restricted. Offerings, however, are steady at 35 cents, f.o.b. works, in tanks, and 37½ to 40½ cents in drums.

Although the scarcity of naphthalene continues most pronounced, nothing higher than 20 cents, f.o.b. works, has been reported. This price is being done in the outside market, where as high as 22 cents has been asked. But so far the quotations above 20 cents have been receiving little attention. The highest reported as done by producers is 18 cents. These interests, however, are offering material as low as 16 cents, a figure representing the minimum of the market.

The market on sulphate of ammonia is quiet, with spot supplies holding at $4.75, f.o.b. works, and futures at $4.50 to $4.60. The export market is nominally at $6.50, eastern seaboard.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plants	
Pure benzol	$0.35 to .40½
Toluol	.35 to .40½
Solvent naphtha	.30 to .35½
Per Pound at Producers' Plants	
Phenol	nominal
Naphthalene, flake	nominal
Napthalene, balls	nominal
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	$4.75

Contract

Pure benzol	$0.35 to 40½
Toluol	.35 to 40½
Solvent naphtha	.30 to 35½
Per Pound at Producers' Plants	
Phenol	nominal
Naphthalene, flake	nominal
Naphthalene, balls	nominal
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	$4.50 to $4.60

Obituaries

JACOB WHEELER PAUL, founder of the Verona Tool Works, Pittsburgh, died July 21 at his home in Oakmont, Pa., aged 91. Mr. Paul belonged to the old school of Pittsburgh pioneers and in the early days was interested in the Pennsylvania canal and navigation on the Allegheny river. He was associated for 21 years with Blakewell, Pears & Co., manufacturers of flint glass. In 1872 he engaged in the iron business with Metcalf, Paul & Co. and one year later founded the Verona Tool Works. Mr. Paul conducted the business of the Verona Tool Works until 1890 when he retired in favor of his son, Harry S. Paul. He was a director of the company, however, until his death. He was at one time a member of the Verona council and belonged to the Duquesne club.

William A. Schreiber, president of the L. Schreiber & Sons Co., Cincinnati, recently died at his home.

Charles H. Cockler, iron and steel manufacturers agent, New York, died July 19, at his home in New Rochelle, N. Y.

Charles L. Deane, who for the past two years has been engaged in special research work building special machinery, died recently at Greenfield, Mass., from injuries suffered in an automobile accident. He was 59 years old, a native of Greenfield and for 10 years was foreman at the Wells Bros. plant, subsequently becoming superintendent of factory No. 2 of the Greenfield Tap & Die Corp.

Morris Stettheimer, secretary of the Nathan Mfg. Co., manufacturer of locomotive appliances, died July 21 at his home in New York city. He was 54 years of age.

Benjamin A. Kimball, president of the Concord & Montreal railroad, a subsidiary of the Boston & Maine railroad, died recently at the age of 87, at his home at Lake Winnipesaukee, N. H.

Frank B. Lewis, general superintendent of the Whiting refinery of the Standard Oil Co., died July 17, at Waunita Springs, Col., aged 46 years. He had been connected with the Standard Oil Co. for 29 years.

M. Sergy Friede, head of the export firm of N. S. Friede Co., 120 Broadway, New York, and an authority on Russia, died suddenly July 20 at Aixles-Baine, France. He had gone abroad in April for a combined pleasure and business trip. During the war he furnished large quantities of supplies to the czar's government. He was one of the country's leading figures in Russian-American trade.

The Peoria, (Ill.) Retail Merchants' association has declared for the non-union shop.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE new central foundry of the General Motors Corp. recently completed in its first stage at Saginaw, Mich., is considered by experts to be one of the best equipped of its type in the motor car industry. The 75-acre site will eventually contain a foundry with three times the capacity of the present structure, which is 164 x 490 feet. The core room is 101 x 390 feet and the pattern shop, storage vault, etc., 100 x 139 feet. The cleaning building is 110 x 281 feet. All are served by an elaborate system of craneways while the sand storage bins, which have a capacity of 8000 tons, are so built that sand can be delivered to any point by gravity chutes. Frank D. Chase, Inc., Chicago, designed the plant.

* * *

THE West Side Machine & Repair Co., 1335 West Van Buren street, Chicago, builder of special machinery, has equipped and placed in operation, a new shop, and is specializing in optical machinery. Charles Rogers is secretary of the company.

* * *

ERECTION of a foundry, 60 x 240 feet with a wing, 60 x 80 feet, is being completed by the Benton Harbor Malleable Foundry Co., Benton Harbor, Mich. Besides this structure the company is erecting an annealing building, 80 x 220 feet.

* * *

THE molding department at the plant of the General Electric Co., Erie, Pa., now is working full time and little effect is felt by the molders' strike which was called last May. Over 50 per cent of the workmen who struck have returned to work, officials say.

* * *

FINAL papers have been recorded in the purchase by the North & Judd Mfg. Co., New Britain, Conn., of the plant of the W. & E. T. Fitch Co., New Haven, Conn. The building is on a lot 192 x 350 feet The new owner has already taken possession of the structure.

* * *

PLANS are being formulated by the Carnegie Steel Co. to increase its river fleet for handling coal in the Pittsburgh district. When the new units are completed the company will have 140 steel and wooden barges and nine steamers transporting coal to Duquesne by river.

* * *

ORGANIZED to make a specialty of punch press work, the Acme Stamping & Machine Co., 637 South Marshfield avenue, Chicago, is operating a new plant for the production of metal specialties. O. E. Prieve is president and R. E. Prieve vice president and secretary of the company.

* * *

AT A recent meeting of the stockholders of the Hoosier Rolling Mill Co., Terre Haute, Ind., it was announced that the company's new plant will be ready for occupation within the next 90 days, and plans are now being made preparatory to moving into it. At the meeting a resolution was passed to pay at the rate of $8 a share dividend on all outstanding common stock.

* * *

THE Heil Co., Milwaukee, manufacturer of tanks, bodies, etc., has advised that it plans to erect an all-steel building, 136 x 260 feet, to be equipped with one 50-foot crane and one 40-foot crane. General equipment, for which the company is in the market, will consist of one-half inch gate shear, 12-foot power brake suitable for ⅜-inch material and a boiler of tubular type, from 150 to 250 horsepower. The company also wants a punch for punching 1-inch holes in ½-inch material.

* * *

VERY little new equipment will be needed for the machine shop being erected for the University of Wisconsin, Madison, Wis., according to the purchasing agent of the college, who has advised that practically all necessary equipment has been purchased from the government under the Caldwell act, which provided for sale to state universities, etc., at 15 per cent of the cost of such equipment to the government. The machine shop is to be used in connection with instructional work at the university.

* * *

CAPACITY of the Kalamazoo Spring & Axle Co., Kalamazoo, Mich., will be increased six times, and the name of the company will be changed to the C. G. Spring Co., according to an announcement by Christian Girl, president. The new company will have a capitalization of $100,000 of preferred stock and 10,000 shares of common stock of no par value. New equipment required will consist principally of special spring making machinery, orders for which have been placed. Besides Mr. Girl the officers are: Vice president and treasurer, Charles Getler, and secretary, Judson S. Clary, while these men with J. G. Utz compose the board of directors.

* * *

THE holdings of the Carroll Foundry & Machine Co., Bucyrus, O., have been purchased by Cleveland interests, and a company known as the Carroll Foundry & Machine Tool Co. has been organized to take over the plant. It is expected the plant will be enlarged and its lines of manufacture extended.

* * *

AFFILIATED with the Virginia Iron Coal & Coke Co. a new organization known as the Virginia Coal & Coke Co. has been incorporated with a $10,000,000 capital to develop and operate coal lands in Kentucky. The new project contemplates the development of 70,000 acres of land in Leslie, Letcher, Pike and Perry counties for all of which railroad extensions will be required. The officers of the new company are John B. Newton president, D. D. Hull vice president and J. W. Cure, secretary and treasurer, all of Roanoke, Va.

* * *

TWO large contracts recently were received by Arthur G. McKee & Co., engineer and architects, Cleveland. One was from the Trumbull Cliffs Furnace Co., Warren, O., calling for excavations, concrete work, sewers, track work, etc., in connection with the new Trumbull-Cliffs blast furnace to be built at Warren, O. The other contract was received from the government, which calls for the developing of the Waco quarry at Russellville, Ala., from which the government will obtain limestone to be used at the nitrate plant at Muscle Shoals, Ala. In addition to opening the quarry, Arthur G. McKee & Co. will erect a crushing and screening plant, power plant, railroad, dwellings, sewers, etc.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

IN ORDER to simplify and consolidate the corporate organization, a new company, chartered under the laws of Pennsylvania, has been formed to take over the Lebanon Valley Iron & Steel Co., with works at Lebanon and Duncannon, Pa. The new company, under the name of the Lebanon Iron Co., will acquire all the property and assets, and will assume all the liabilities and obligations of the old company, and will take active hold of the business starting Aug. 1. The officers of the old company will fill similar positions with the new organization, namely: President, Hon. William C. Sproul; vice president, Felton Bent; secretary and treasurer, Howard Longstreth, and general manager, John C. Brown.

* * *

ERECTION of an addition to its plant is contemplated by the Allen Machine Co., Erie, Pa. Present plans call for a brick building, 55 x 248 feet, and 35 feet high. The company's plant is located at Twelfth street and East avenue, Erie, Pa.

* * *

ERECTION of a new foundry building, with a casting floor, 30 x 50 feet, has been completed by the Lay-Vall Brass Co., Orville, O., and it is expected the building will be put in operation shortly. It will be devoted to the production of brass, bronze, and aluminum castings.

* * *

A MANUFACTURING site of 10 acres has been purchased at Marysville, Mich., by the Aluminum Manufacturers, Inc., Cleveland, and it has been announced that the company will erect a modern, scientifically equipped plant for the manufacture of aluminum castings and drop forgings. E. E. Allyne is president of the company.

* * *

THE award for foundry improvements to be made by the Champion Engineering Co., Kenton, O., crane builder, will be made some time in August, according to information from R. W. Valls, vice president and general manager. As planned, this addition will triple the company's foundry capacity and bids now are being taken.

* * *

CONSTRUCTION of 25 2-story and 15 1-story frame residences, has been contracted for by the Solvay Process Co., Detroit. The houses will be located in the River Rouge district and will be occupied by the company's employes.

* * *

THE New Haven car plant of the Standard Steel & Bearings Co., Inc., formerly the Marlin-Rockwell Co., has been recently purchased by the Safety Car Heating & Lighting Co., at approximately $450,000. The Safety Car Heating & Lighting Co. is engaged in the manufacture of pintsch gas and other safety appliances for railroads and has a large plant in Jersey City, N. J. The industry will be moved to New Haven.

* * *

THE Republic Tool & Mfg. Co., with two plants in Cleveland, and one in Detroit, has purchased a 7½-acre site in Cleveland, on which it plans to erect and equip a modern plant. The first unit will contain approximately 40,000 square feet of floor space, and when completed the plant will cover about 150,000 square feet. The company manufactures pressed steel cores and mandrels used in the manufacture of tire building equipment. C. E. Lowe is president, B. V. Selby, vice president, and E. E. Lenarz, treasurer.

* * *

DIRECTORS of the Akron Gear & Engineering Co., Akron, O., are meeting this week to decide whether or not it will build a large and modern machine shop on its 4½-acre site in East Market street, near Martha avenue, that city. This company manufactures a full line of gears and furnishes large quantities to the Akron rubber plants. It also manufactures rubber machinery cores and molds, which are shipped to all parts of the United States and Canada. Officers follow: J. Asa Palmer, president; W. F. Warden, vice president; W. J. Frank, secretary and assistant treasurer; Otis E. Prier, treasurer and assistant secretary; T. A. Seacrist, general manager; J. R. Triplett, sales manager; and William A. Brubaker, superintendent and mechanical engineer. These with N. C. Stone, president National City bank, Akron, comprise the board of directors.

* * *

CONSTRUCTION work has been started by the Gilson Mfg. Co., Port Washington, Wis., on additions which will increase the capacity of its plant from 30 to 35 per cent. The main extension will consist of a machine shop, 80 x 200 feet, while a storage and shipping building will be 40 x 200 feet. The Gilson Co. conducts a foundry and machine shop, manufacturing furniture, hardware, gasoline engines, garden tractors, etc. Harry W. Bolens is president of the company.

* * *

FOLLOWING the disposition of practically the entire holdings of the Manitowoc Shipbuilding Co., Manitowoc, Wis., a new concern styled the Manitowoc Shipbuilding Corp., capitalized at $1,500,000, has been organized to take over the plant. A. L. Nash, E. W. Ledvina and E. L. Nash, were named as incorporators. The Manitowoc shipyard is one of the oldest and largest on the Great Lakes, and handled large contracts with the Emergency Fleet corporation, all of which were completed some time ago.

* * *

WITH an elaborate ceremony, the Interstate Forge Co., Milwaukee, a $200,000 corporation which was organized some months ago, formally started work in its new plant several days ago. The plant is situated on a 9-acre tract at Twenty-seventh and Lake streets, Milwaukee. S. M. McFedries, vice president and general manager, held the irons as a mammoth drop hammer swung into action, signalling the beginning of operations. The company will specialize in light forgings for the automobile, tractor and farm implement trades. Practically the entire equipment of the plant was purchased from the Chambersburg Engineering Co., Chambersburg, Pa.

Wages Not Too High

Says Judge Gary—Sees Thrift and Prosperity Ahead

Elbert H. Gary, chairman of the United States Steel Corp., on the eve of sailing from New York on the La France, July 22, for a vacation trip to Europe, from which he is expected to return early in October, in reply to questions, made some interesting comments on present economic conditions and the outlook generally. He said:

"Somewhat to my surprise, I have, upon inquiry during the past 30 to 40 days, ascertained that labor at our various plants is more efficient than it has been at any time before during the last five years.

"From my viewpoint, I think business conditions should be considered satisfactory. In some respects I think there has been a lack of prudence in business management since the armistice of 1918. I refer especially to prices. There seems to have been a disposition on the part of large numbers to ask and accept the highest prices which could be obtained.

"In addition to this situation the disposition to work and produce has been materially diminished. The workmen in the field, at 4 o'clock or some other early hour, drops his tools and leaves the hay or grain unsheltered to be spoiled or injured by rains during the night, when under old methods the same would have been stacked or housed before quitting work. This practice has been followed in many different lines of work. In order to remove and replace a headlight on a locomotive it has been necessary to employ four different men, because of labor regulations, where one man heretofore performed the same service in less time. It has been recently published that the tailors have announced an increase of 15 per cent in selling prices because the workmen had advanced their rates 15 per cent. These common illustrations are well known to the average individual. The rule has prevailed of doing as little work as possible and of securing as large pecuniary results as could be obtained.

"It is, of course, evident to the thinking person that everyone who has intentionally increased his profits beyond reason has been operating against his own interest. As the result of these inexcusable conditions, which I think in many cases have been unconscionable, there has naturally folowed a diminution in the buying movement. The disposition to decrease expenditures and to increase savings has been noticeable of late. I think during the next few months these tendencies throughout the country will be more and more noticeable.

"Prohibtion laws also have had a marked effect.

"These signs are healthy. They mean larger production, lower costs, greater thrift, improved health and augmented decreases in living expenses. There is plenty of business, sufficient numbers to transact it, reasonable profits offered, and larger resources than ever before. If we take advantage of our opportunities, as now seems to me to be the tendency, success and prosperity in this country are assured.

"Labor has never before in any country been paid as high compensation in proportion to the costs of living as it has been paid during the last few years, and is being paid at the present time. But it has not been paid too much. There have been and are cases where compensation has been too low and work too strenuous, but I have been speaking of the general rule. A majority of the employers and employes read and listen attentively to suggestions relating to their obligations to all others, including the general public.

"While I recognize, and for many months have comprehended, dangers in the general situation, I am more optimistic in regard to the future of this country than I have been at any time before during the last six years. If people generally will recognize the possible dangers which have been hinted at and will, each for himself or herself, do everything possible and practicable to improve conditions, we shall soon return to a basis of living which should be entirely satisfactory."

Pig Iron Association in Summer Meeting

The mid-summer meeting of the American Pig Iron association was held at the Youngstown Country club, Youngstown, O., last week, about 30 members of the organization attending. A luncheon at the club was followed by a business session after which the members engaged in a round of golf. The members of the association were entertained as guests of the A. M. Byers Co.

Substantially higher prices for pig iron than those now prevailing were predicted by Theodore Friend, president of the association and head of the Clinton Iron & Steel Co., who addressed the meeting. He pointed out that the present high price of coke and the impending rail rate advance, as well as the heavy demand for iron, were reasons why prices will go much higher. He also cited the fact that spot blast furnace coke is now selling for more than a ton of pig iron cost a few years ago.

Buys Office Building

Wheeling, W. Va., July 27.—The Wheeling Steel Corp., holder of the Wheeling Steel & Iron Co., Labelle Iron Works and the Whitaker-Glessner Co., which recently were merged has purchased the Schmulbach building, a 12-story structure, of this city. The company plans to use three floors of the building as soon as it is able to secure possession, which may not be before May 1, 1921. Extensive plans for remodeling and improving the building are being made.

Coal Shortage

Is Expected by Canadian Manufacturers with Supplies Exhausted

Toronto, Ont., July 27.—Manufacturers are growing increasingly anxious with regard to the supply of bituminous coal for the winter. The plants have so far only been kept running from hand to mouth, and owing to the shortage many of them have been compelled to limit their output. Consumers of bituminous coal have been unable to stock up for the winter, and there is no prospect for improvement so far as the present sources of supply are concerned.

The board of railway commissioners has been vested with full powers to deal with the fuel situation to obtain supplies from the mines of Alberta. L. E. Drummond of Edmonton, representing the Alberta government, was in conference this week with the commissioners. The matter is simply a question of transportation at rates sufficiently low to enable operators to compete with the American mines. Mr. Drummond states that if such a rate were assured, the Alberta mine owners would have no difficulty in making extensions to provide for an increased output.

At a special general meeting held in Halifax, N. S., July 15, the shareholders of the Dominion Steel Corp., by a unanimous vote ratified the proposal to merge the company with the British Empire Steel Corp. It was reported that 298,760 of the 430,000 common shares outstanding were represented. The Nova Scotia Steel & Coal Co. has already accepted the merger. The Canada Steamship Lines has yet to vote on it.

Following the meeting, President Roy M. Wolvin made the announcement that the British Empire Steel Corp., had made a gift of $250,000 to Dalhousie University, to establish more professorships in research work in connection with the natural resources of Nova Scotia.

It is announced by the Canadian Advisory Council for Scientific and Industrial Research that the investigations carried on by Prof. Alfred Stansfield, of McGill university, Montreal, with the reduction of iron ores by gases at low temperatures and with the electric furnace have resulted in some important discoveries. On some of the findings patents have been applied for to permit of the commercial development of methods which will render valuable the large low-grade iron ore deposits of Canada. The investigation was aided by a grant of $1200 from the advisory council.

Machine Tool Market Is Inactive

Business Continues Dull in All Districts, Most Dealing Being Done on Single Machines—Railroads Continue Out of Market Pending Rate Increase—Transportation in Some Districts Is Improved

INACTIVITY continues to rule in the various machine tool selling centers of the country. In not one district has there been any business of size consummated during the past week, and but for the fact dealers and manufacturers have been filling orders for one and two machines, the machine tool business would be practically at a standstill. A few fair-sized inquiries and orders have been current in the eastern part of the country but these have all been snapped up immediately upon appearance and it is doubtful, from present indications, if any business of this size will appear for some time.

The railroads continue out of the market and dealers have about decided that it will be months, even after rail rates have been advanced, before the roads will come into the market for any great amount of equipment. Transportation is a dominant factor in some parts of the country, some dealers being called upon to ship their material by truck, while many tool manufacturers have been forced to utilize trucks to transport raw material.

Many firms in need of equipment are thought by dealers to have set aside their wants until a future date, due to their inability to get banks to finance their purchases. Consequently all this business is piling and no doubt when the money market eases, the machine tool business will leap ahead.

In the East during the week, activities have centered around the purchase by the Wright Aeronautical Equipment Co. of $100,000 worth of machinery for its new plant at Paterson, N. J. Other eastern buyers included the Aerial Camera Co., New York, which closed on a small list of precision equipment. Crane business has been fair in the East, a number of large orders being filled and several inquiries being out. Quiet continues to rule in the Chicago and Cleveland districts, business in both sections being confined principally to that done in single machines. In the New England district dealers are hopeful of a brighter turn of events shortly, despite the fact the dropping off in the automobile market is now beginning to have its effect.

Although building operations have dropped off considerably some industrial construction is going on and includes erection of plant buildings for the Heil Co., Milwaukee, Wis., which wants equipment; the Hamilton-Beach Mfg. Co., Racine, Wis.; the Republic Tool & Mfg. Co., Cleveland, while contemplated construction includes a plant for the Akron Gear & Engineering Co., Akron, O., and others.

Eastern Machinery Market Continues Sluggish

NEW YORK, July 24.—Buying in the eastern machine tool market during the week appears to have centered around the activities of the Wright Aeronautical Equipment Co., which closed on approximately $100,000 worth of machinery for its new plant at Paterson, N. J. The list comprises boring machines, engine lathes, turret lathes and drilling machines, and is now virtually closed. Another buyer is the Fairchilds Aerial Camera Co., 136 West Fifty-second street, New York, this company closing on a small list of precision equipment. The market as a whole, however, is exceedingly quiet.

The railroads are doing but little, and in some quarters early action by these interests is regarded as unlikely. This view at the moment is being entertained particularly by machine tool representatives who recently returned from a trip to many of the shops of the New York Central and Pennsylvania railroads. The need of equipment was admitted by railroad officials, but the continued lack of sufficient appropriations made buying at this time impossible. It appears to be the general belief that little buying will be done until after the interstate commerce commission announces the new rate schedules.

An important development in the machine tool trade in New York is the purchase, by F. H. Niles & Co., of the controlling interest in the Wickes Machinery Co., Jersey City. H. W. McAteer, president of the American Steel Export Co., is chairman of the board of both companies, each of which will be continued under its own name. F. H. Niles, president of F. H. Niles & Co., becomes vice president of the Wickes Machinery Co., while F. A. Fitz Gerald continues as president of the Wickes Machinery Co. and becomes vice president of F. H. Niles & Co. This action on the part of the Niles company became necessary in order to meet the demands of its rapidly growing machine tool business.

The Wickes Machinery Co. succeeded to the business of Wickes Bros., who were engaged in the machinery power equipment business for over 40 years. As a result of this amalgamation, F. H. Niles & Co., in addition to their own line of heavy power presses and heavy machine tools, both new and used, in which they specialize, have at their disposal the power equipment business of the Wickes Co., together with their warehouse containing 60,000 square feet, located in Jersey City. The New York office of Wickes & Co. will be in the office of F. H. Niles & Co. in the Woolworth building. This latter company, in addition to its large used machinery business, also represents in the New York territory the following firms: Cisco Machine Tool Co., lathes; Hoefer Mfg. Co., upright drills; John Steptoe Co., shapers and

Ludlum Steel Consistently Uniform

Mohawk Extra
High Speed Steel

Albany
Alloy Tool Steel

Huron
Alloy Die Steel

Yuma
Chrome Magnet Steel

Pompton
Carbon Tool Steel

Oneida
Oil Hardening Steel

Teton
Ball Bearing Steel

Seminole
"Foolproof" Chisel Steel

The extreme high quality attained in the manufacture of *"Ludlum" Steels* does not just "happen." It is the result of thoroughness and care throughout the entire process of manufacture.

The illustration above shows a small section of our large chipping room—just another precaution to assure users of *"Ludlum" Steels* the kind of material that most particular users of high speed steel are demanding.

What are your requirements?

Prompt shipments from warehouse stock at Watervliet, N. Y., Detroit, Mich., Chicago, Ill., or Cambridge, Mass., handled through our District Office.

Ludlum Steel Company

General Offices and Works:
WATERVLIET, N. Y.

Branches:
Chicago Cambridge, Mass. Detroit Buffalo New York City
Cincinnati Cleveland Philadelphia Pittsburgh San Francisco

millers; West Tire Setter Co., helve hammer; Hilsey Wolf Machine Co., electric portable tools; Mueller Machine Tool Co., radial drills; Hawley Down Draft Furnace Co., oil burning and electric brass melting furnaces, and the Berkshire Mfg. Co., molding machines.

Foremost among crane awards is one involving for 2½ yard grab bucket cranes for the Virginia-Carolina Chemical Co., Richmond, Va. Two of the cranes are of 80-foot span and are for installation at Baltimore, and two are of 60-foot span, and are for Richmond. This business went to the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y. W. R. Grace & Co., Hanover Square, New York purchased a 20-ton handpower crane, with 62-foot span for the Whiting Foundry & Equipment Co., Harvey, Ill. The crane is for export. The Whiting company also received a contract for a 5-ton handpower crane, with 12-foot span, from James M. Boyle, 14 Wall street, New York.

Among orders placed recently with the Shepard company are one 5-ton hoist for the Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.; one 5-ton hoist for the Barrett-Haentjens Co., Hazleton, Pa.; a 2-ton grab-bucket crane for the Jackson Steel Products Co., Jackson Mich.; three 1-ton hoists for the Triumph Electric Co., Cincinnati; one 1-ton hoist for Austin Bros., Atlanta, Ga.; two 2-ton hoists and one 4-ton hoist for the Cambria Steel Co., Johnstown, Pa.; two 2-ton hoists for the Lockhart Iron & Steel Co., McKees Rocks, Pa.; two 1-ton hoists for the Marietta Mfg. Co., Marietta, Pa., and one 2-ton hoist for the W. K. Henderson Iron Works Shreveport, La.

The Metal & Thermit Corp., 120 Broadway, New York, has purchased a 15-ton locomotive crane for San Francisco. The Southern Pacific railroad, in addition to the two cranes it recently purchased from the Ohio Locomotive Crane Co., Bucyrus, O., has placed a 15-ton locomotive crane with the McMyler-Interstate Co., Cleveland. The American Steel Foundries, New York City, has purchased a 25-ton crane from the Browning Co. for Thurlo, Pa.

Locomotive crane inquiries include a 10-ton oil-burning crane for the Tidewater Oil Co. 11 Broadway, New York. The crane is for operation at New Orleans. Chapman & Fisher, 524 Walnut street Philadelphia, are inquiring for a 15 or 20-ton locomotive crane. The Paige-Detroit Motor Car Co., Detroit, is in the market for a 15-ton locomotive crane. Day & Zimmerman, architects, Philadelphia, are preparing plans for two power plants, for which conveying equipment will likely be needed. One is a $400,000 project for the United States Finishing Co., Norwich Conn., and the other is a $100,000 project for the Olean Electric Light & Power Co., Olean, N. Y.

Dealers Are More Hopeful

BOSTON, July 24.—A sharp dropping off in the automobile market recently has had its effect all down the line and is now reaching machine tool builders. Orders for tools used in the automobile field have dropped off during the week and some cancellations have been reported. In spite of this, there is a cheerful sentiment in the local market, one large dealer feeling that the crisis has passed and that late inquiry has been better. The specialty manufacturing business in New England has a decidedly firm tone. Bottle cap manufacturers and manufacturers of metal containers of all kinds are busier than ever. The American Can Co. and its subsidiary concerns are swamped with orders and are almost continually in the market for individual machine tools. The textile machine builders continue busy with orders on their books extending far into the future. The Saco-Lowell shops, Boston, are asking for three shapers. Crompton-Knowles, Worcester, Mass., manufacturers of textile castings, want one shaper and several smaller tools. The General Electric Co. has a new list out covering tools and tool equipment totaling between $80,000 and $90,000. A large part of this is for woodworking machinery. The list includes 12 standard metal working lathes for five to six weeks delivery. Reports from this company show sales for the first five months of 1920 to be at a greater rate than ever. Orders for machine tools for Lynn and Pittsfield, Mass., have been placed almost weekly for the last two months and have included 20 lathes.

Market Remains Dull in Chicago

CHICAGO, July 26.—Quiet conditions continue to prevail in the machine tool equipment market, accentuated by difficulties made particularly noticeable in this immediate district by a strike among teamsters and truckers handling machinery. As a result of this trouble practically nothing is moving into or out of salesrooms and equipment is shipped to buyer direct whenever possible, he making his own delivery. Railroads have not come into the market, with the exception of the Rock Island and Burlington railroads, which have bought a few tools. Apparently the roads are devoting their time to other lines of buying. As this is vacation and repair time and many plants are shut down for overhauling few shoppers visit warerooms. Crane inquiry is slack and no new business has come up recently, a natural result of the slackness in new plant construction. The American Forge Co., Chicago, is erecting a plant containing five buildings. The International Harvester Co. is forwarding plans for its motor truck plant at Ft. Wayne, Ind., and will use 12 acres for the first unit. The Hamilton-Beach Mfg. Co., Racine, Wis., is building a foundry. The Waukesha Casting Co., Waukesha, Wis., will build a foundry.

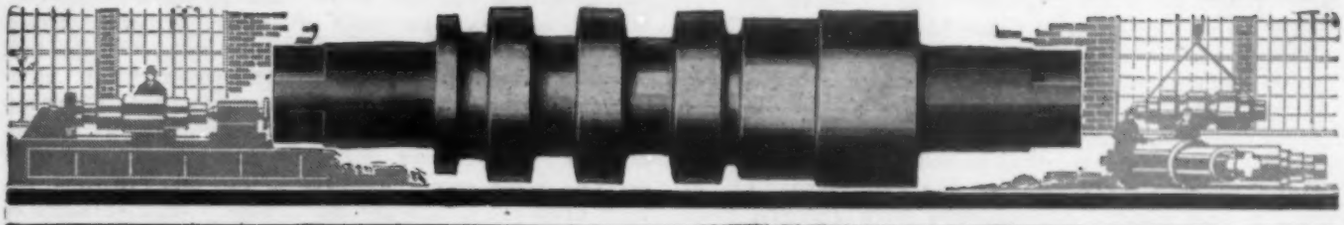
Market Is Extremely Dull

CLEVELAND, July 26.—Inefficient rail transportation and a tightened money market are the dominating factors in the machine tool and equipment market in this district. Orders are few and inquiries of any size are unheard of, but dealers report that despite the laxity of large orders and inquiries there continues to be enough single machine business current to keep the trade busy. As a rule orders of this kind are closed the very day the inquiry appears. No rail business is in sight in the district, and dealers feel that such business will not appear for months, in view of the fact it apparently is the plan of the railroads to withhold orders until the interstate commerce commission has granted an increase in rates.

A big factor in the dullness of the market is the tightened money market. Dealers report that many firms in need of equipment have been forced to hold up their orders because they have been unable to get banks to finance their purchases. Consequently these firms are purchasing only the equipment which they actually need, and have set their enlargement programs aside.

Rail transportation remains the dominating factor. Trucks to a great extent are being called upon to transport not only finished machines, but manufacturers have been forced to employ this form of transportation in order to get their raw materials, in order to keep their plants in operation. Added to the lack of rail transportation is the confused state of the roads, many shipments being lost in transit.

No business of any extent was done in the district during the week and prospective business gives but little assurance of any decided picking up in the market for



Rolling Mill Jim Wants to Know

Will Harding and Coolidge,

or Cox and Roosevelt, be the

Camel's Lucky Strike?

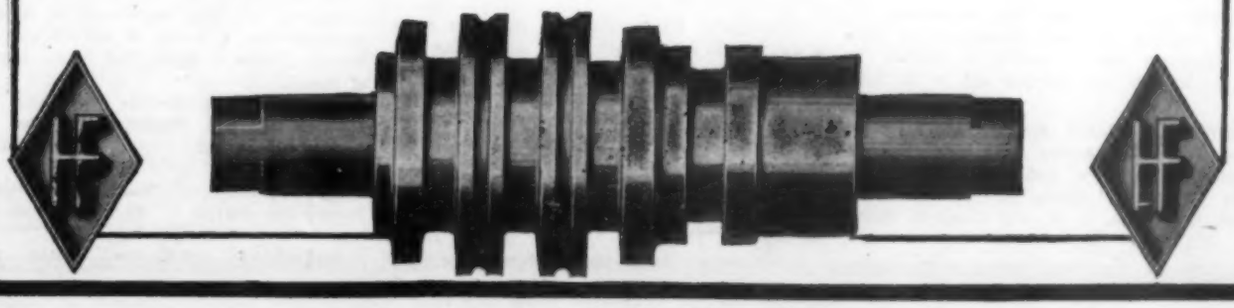
So Long,

Rolling Mill Jim.—

Hubbard Steel Foundry Co.

EAST CHICAGO, IND.

All Kinds of Iron and Steel Rolls and Steel Castings



some time. Of interest to the trade has been the organization of the Universal Crane Co., at Elyria, O. This company has been organized to manufacture cranes for use on motor trucks and plans are being prepared for the erection of a plant at Elyria, to be 80 x 200 feet. Dealers expect this company to be in the market shortly for considerable equipment. Another item of interest is the plan of the Akron Gear & Engineering Co., Akron, O., to erect a new plant. Advices have been received from Indianapolis, that the Hercules Electric Co.'s plant has been purchased by Charles G. McCutchen and associates, who plan to enlarge the plant, which will be devoted to the exclusive manufacture of electrical machines and apparatus. The Timken Roller Bearing Co., Canton, O., has taken out a permit to erect an addition to its present plant, as has the Lunkenheimer Co., Cincinnati. It is understood that the International Harvester Co. will erect a plant at Ft. Wayne, Ind., which will be devoted to the building of automobile trucks. Another Indiana concern which plans to build is the Indestructible Wheel Works, Lebanon, Ind., which will expend $100,000 in improvements. The Gray Machine Tool Co., Batavia, N. Y., has not yet closed on its inquiry for inclined presses and other equipment, nor has the Majestic Machine & Tool Co., Inc., New York City, closed on its requirements.

Another inquiry which is current in this district is that of the Heil Co., Milwaukee, which company plans to erect a plant building, 136 x 260 feet. Equipment for this structure will include two 10-ton cranes, ½-inch gate shear and a punch press.

Improved Transportation is Noted

PITTSBURGH, July 27.—Improvement in the shipping situation is reported by some machinery and machine tool interests in this district. The Cincinnati district still is tied up but at other points it is reported that it is easier to make deliveries. Other interests, however, do not find any improvement but state that shipments remain extremely unsatisfactory, and especially so with regard to getting material. This has resulted in more hauling by trucks. Inquiries for equipment of all kinds on the whole have shown a further decline. Some recent business in the crane market has been done but it has become unusually dull. Makers of foundry and rolling mill equipment report that the railroad situation is the biggest factor in keeping the market quiet. Steelmakers are withholding appropriations, being unwilling to tie up their finances, which they claim would be the result, because of inability to get satisfactory delivery of equipment. Some are said to be figuring on large purchases once conditions improve. The anticipated rail rate advances if granted, are expected to have a stabilizing effect toward heavy buying on the part of all roads in this section.

Higher prices are expected to develop following the rate increases but makers say this will not be an important element in restraining purchases. Improved rail service and easier money are looked upon as being the chief requisites for real activity in the equipment market. McIntosh, Hemphill & Co., Pittsburgh, recently received an order for 12 stands of 28-inch hot rolls and 12 stands of 24-inch cold rolls from the Burmah Oil Co., Ltd., Jamshedpur, Bengal, India. McIntosh, Hemphill & Co. also recently shipped a 27 x 42-inch universal mill for the Dominion Steel Foundries Co., Hamilton, Ont., and took an order for a 32 x 46-inch universal mill for the Soho plant of the Jones & Laughlin Steel Co. Pittsburgh. Some makers of both iron and woodworking machinery report taking a number of single orders during the past week.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

BOSTON.—The Holtzer-Cabot Electric Co. has let the contract for a 1-story, 26 x 78-foot plant.

BOSTON.—The Auto Glare Remover Co. has been chartered to build machinery with a capital of $100,000, by William W. O'Neill, Virgil A. Charles, Harry Elsner and others.

BOSTON.—The Metals Refining & Production Co. has been incorporated with a capital of $75,000, by William B. Nash, Brookline, Mass., Nelson G. Cooley, Auburndale, Mass., and Anthony J. Perry, Medford, Mass.

BOSTON.—The Safandshur Fire Extinguisher Co. of New England has been incorporated to make fire extinguishers with a capital of $50,000, by Harry L. Michaels, Leb Schwartz and A. J. Weisberg.

BOSTON.—The Electric Supply Corp. has been chartered to make electrical goods with a capital of $100,000, by E. T. Carbee, Hooksett, N. H.; Charles K. Marston, London, N. H.; Solomon B. Atwood, New Boston, N. H., and George M. Faulkner.

BOSTON.—The Engineering Service & Construction Co. has been incorporated with a capital of $20,000, by Edward F. McSweeney and Thomas F. McSweeney, both of Framingham, Mass., Nelson F. Erickson, Cambridge, Mass., William A. Driscoll, Lowell, Mass., and Thomas H. Mahiney.

BOSTON.—The New England Welding Co. has leased a building in Worcester, Mass., which it will equip immediately. The company, which is a subsidiary of the Thomson Electric Welding Co., Lynn, Mass., was recently organized with a capital stock of $50,000 to specialize in heavy steel and cast iron sections.

CAMBRIDGE, MASS.—Bids have closed for a 90 x 90-foot foundry and garage for George Lawrence.

CAMBRIDGE, MASS.—The Electric Boiler Corp. has been incorporated to make boilers and heaters with a capital of $50,000, by Frederick Bernard, Watertown, Mass.; Andrew E. Colson and Horatio Alden, Brookline, Mass.

HOLYOKE, MASS.—J. & W. Jolly, Inc., has let the contract for a 2-story, 100 x 100-foot foundry to cost $50,000.

FITCHBURG, MASS.—George Morrell, Inc., has been chartered with a capital of $40,000, to manufacture metal goods, by Charles R. McGrath, James H. McGrath, Clinton, Mass.; George Morrell, Leominster, Mass., and John F. McGrath.

MEDWAY, MASS.—The United Awl & Needle Co. plans a plant addition.

NEW BEDFORD, MASS.—J. C. Rhodes & Co., Inc., Taunton, Mass., maker of eyelets, has let the contract for a 4-story, 70 x 200-foot factory, and a 1-story, 57 x 104-foot addition to factory No. 1 to cost $200,000.

SALEM, MASS.—The William Woelfel Safety Appliance Co. has been incorporated to make safety appliances with a capital of $45,000, by William Woelfel, Thomas F. Moran and E. L. Tracy, both of Boston.

SPRINGFIELD, MASS.—The Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has let the contract for a 1 and 2-story, 125 x 160-foot foundry to cost $35,000.

WOBURN, MASS.—The foundry of the Woburn Iron Foundry was damaged by fire recently with $20,000 loss.

BRIDGEPORT, CONN.—The American Tube &

THE
BOURNE-FULLER CO.
IRON, STEEL,
PIG IRON,
COKE.

THE
UPSON NUT CO.
BOLTS, NUTS, RIVETS,
OPEN HEARTH STEEL,
BILLETS, BARS.

ANNOUNCEMENT

For the purpose of more efficiently handling the business of THE UPSON NUT CO. and THE BOURNE-FULLER CO. (the ownership and management of these Companies having been identical for the past eight years), a consolidation has been effected under the name of THE BOURNE-FULLER CO.

The Upson Nut Co. plants will continue operations as heretofore as The Upson Works of The Bourne-Fuller Co., the product of their Nut and Bolt departments being marketed under the same trade-marks as in the past and so shipped and invoiced as to indicate whether from Cleveland or from Unionville plants.

It will be our purpose to maintain the high quality of our product and to improve our service in every possible way.

We shall hope to merit and enjoy the favorable consideration which has been shown us in the past and for which we take this occasion to express our appreciation.

THE BOURNE-FULLER CO.

Cleveland, Ohio, July 1, 1920.

Stamping Co. will erect a 1-story, 55 x 60-foot with a wing 28 x 40-foot factory addition.

BRIDGEPORT, CONN.—The Park City Machinery Co. plans a 40 x 80-foot plant.

BRIDGEPORT, CONN.—The American Tube & Stamping Co. contemplates a plant, 1 story, 40 x 160 feet, to cost $16,000.

HAMDEN, CONN.—The Yale Tire & Rubber Co., New Haven, Conn., has let the contract for a 1-story, 37 x 90-foot building.

HARTFORD, CONN.—Plans are being drawn for a 2-story, 50 x 125-foot machine shop to cost $125,000 for the city.

NEW HAVEN, CONN.—The F. L. McDermott Iron Works, Inc., has been incorporated with $25,000 capital by J. H. Mangan, J. M. McDermott and F. L. McDermott.

STAMFORD, CONN.—The Petroleum Heat & Power Co. has let the contract for a 1-story, 60 x 80-foot foundry.

STRATFORD, CONN.—The Spring Perch Co., maker of springs, is erecting a 1-story, 27 x 100-foot building for storage.

WATERBURY, CONN.—The E. J. Manville Machine Co. has let the contract for a 2-story, 50 x 200-foot factory.

WATERBURY, CONN.—The Waterbury Farrel Foundry & Machine Co. will erect a 1-story, 43 x 180-foot with two ells, 47 x 50-foot and 17 x 20-foot factory addition.

North Atlantic States

BINGHAMTON, N. Y.—The Jones Scale Works plans a storehouse, 3 stories, 52 x 68 feet, to cost about $30,000.

BINGHAMTON, N. Y.—The Hasbrouck Mfg. Co. has been incorporated to make check protectors with a capital of $100,000, by B. D. Leighton, J. L. Sloan and E. Ehlich.

COLLEGE POINT, L. I., N. Y.—The American Hard Rubber Co. plans a plant, 2 stories, to cost $250,000.

NEW YORK.—The Cosmos Burglar Proof Spring Lock Corp. has been chartered with a capital stock of $80,000, by M. Freedman, B. R. Jacobs and G. Lindner, West Hoboken, N. J.

NEW YORK.—The Gemart Jewelry Mfg. Co. recently was incorporated with a capital stock of $6000, by M. Rubin, S. Stambler and I. Melnikoff, 549 Broadway.

NEW YORK.—The General Automotive Products Co. has been incorporated with a capital of $15,000, by A. Scheer, G. Luxner and B. Fleischer, 41 Union Square.

NEW YORK.—The Tuckahoe Iron & Coal Corp. has been organized with a capital stock of $250,000, by J. W. F. Eglers, N. H. Fairchild and P. Kohn, 223 West Seventy-ninth street.

NEW YORK.—The Fuller Co. recently was incorporated to make pulling machines, with a capital stock of $5000, by D. de W. Weyer, G. W. Geiling and T. Hartigan, 2 Wall street.

NEW YORK.—The Henry Steel Products Corp. recently was organized with a capital of $50,000, by E. A. Henry, M. F. and C. S. Ashley, 156 Broadway.

NEW YORK.—The Rite-Wa Machine Co. has been chartered with a capital stock of $12,000, to manufacture oil burners, by E. Flander, N. Lubin and J. F. McGowan, 356 West 119th street.

NEW YORK.—The Serena Metal & Chemical Works has been incorporated with a capital stock of $25,000, by A. J. Sofianopoules, J. J. Gibson and C. C. Snow, 24 Walker street.

NEW YORK.—The Brook Machine & Tool Co. has been chartered with a capital stock of $5000, by J. Trenz, A. H. Mix and M. Dickman, 393 East 168th street.

NEW YORK.—The Bologh Skylight & Gravity Ventilator Corp., recently was incorporated with a capital stock of $250,000, by M. X. C. Weinberger, P. Bologh and L. H. Solomon, 200 Fifth avenue.

ROCHESTER, N. Y.—The Simmons Method Hob Mfg. Co. Corp. has been incorporated with a capital stock of $250,000, by O. G. Simmons, F. S. Milberg and G. K. Williams.

SYRACUSE, N. Y.—The Syracuse Drop Forge Co. has been incorporated with an active capital stock of $340,000, by G. H. Brown, C. C. Bradley Jr. and C. Stanton.

WATERTOWN, N. Y.—Work is progressing on the new foundry for the Eager Electric Co., and it is expected the building will be ready for occupation about Sept. 1.

ATHENS, PA.—The Ingersoll-Rand Co. plans a foundry and pattern shop, 142 x 600 feet and 50 x 150 feet.

BEAVER FALLS, PA.—The Superior Toy & Novelty Co. has been organized with a capital of $35,000, by Louis C. Kennedy, George J. Genung and Wilbert L. Welsh.

CARBONDALE, PA.—The Hendricks Mfg. Co., Inc., plans a machine shop.

CENTRE HALL, PA.—The Centre Hall Lime & Stone Co. has been incorporated with a capital of $15,000, by C. A. Spyker, James Creek, F. S. Koons and Irving S. Horton, Reading, Pa.

COLUMBIA, PA.—The Keeley Stove Co. is drawing plans for a plant addition.

GREENSBURG, PA.—The Westmoreland Car Co. has been incorporated with a capital of $200,000, by W. M. Berlin, P. S. Patterson and C. E. Berlin.

JOHNSTOWN, PA.—The Johnstown Auto Equipment Co. recently was incorporated with a capital stock of $5000, by J. S. Kelsey, Mary Kelsey and J. S. Kelsey Jr.

LILLY, PA.—The Lilly Light, Heat & Power Co. recently was chartered with a capital of $5000, by T. W. Ryan, A. F. Tickerhoff and M. C. Lynch.

NEW CASTLE, PA.—The New Castle Rubber Co. plans plant additions. The company has increased its capital.

PHILADELPHIA.—Fire recently damaged the plant of the Lewis Mfg. Co.

PHILADELPHIA.—The Mott Co. of Pennsylvania iron and steel articles, has been incorporated with a capital stock of $5000, by William M. Allen, Bala, Pa., Albram C. Ranch and Edward F. Beecher.

PHILADELPHIA.—The plants of the Aetna Machine Co. and the Columbus Tool & Machine Co. recently were damaged by fire.

PHILADELPHIA.—The plant of the Oxford Brass Foundry recently was damaged by fire. The loss was estimated at $20,000.

PHILADELPHIA.—The Foss Hughes Co., Twenty-first and Market streets, plans alterations to its power plant.

PITTSBURGH.—The Progress Tube Co. recently was chartered with a capital stock of $50,000, by S. I. Aronson, Louis M. Bennett and Frank Magidson.

PITTSBURGH.—Bailey-Lewis, Inc., mill, mine and contractors' machinery, has been incorporated with a capital stock of $5000, by D. S. Lewis, William H. Bailey and R. A. McCrady.

PITTSBURGH.—Frank Tinker & Son Co., Fifty-seventh and Butler streets, plans to rebuild its machine shop, which was damaged by fire some time ago.

RITTERSVILLE, PA.—The Judson Tractor Co. contemplates a plant.

STROUDSBURG, PA.—The Pennsylvania Steel & Wire Co. recently was incorporated with a capital stock of $30,000, by Chester H. Rhoades, Henry Smoyer, Louis Lauport and Charles Robertson.

WEATHERLY, PA.—The Weatherly Foundry & Machine Co. has purchased a tract of land on which it is reported planning to build a large plant addition.

WILKINSBURG, PA.—The Barton-Ostendorf Machine Co. has been incorporated with a capital stock of $20,000, by James H. Barton, W. L. Ostendorf and S. R. Moffitt.

YORK, PA.—The York Metal & Alloys Co. has been organized with a capital stock of $10,000, by George Marlow, Robert W. Emerton and George J. Haenn.

BLOOMFIELD, N. J.—The Westinghouse Lamp Co. has purchased a plot of land and will erect an addition.

CAMDEN, N. J.—The Victor Talking Machine Co. has plans for an office building to cost $30,000.

ELIZABETH, N. J.—The Bethlehem Shipbuilding Corp. has plans for a 3-story building, 41 x 62 feet.

NEWARK, N. J.—The Osborne Co. is taking bids for a power house, 1 story, to cost $50,000.

NEWARK, N. J.—The Patton Paint Co. will erect a 5-story plant addition, 53 x 87 feet.

NEWARK, N. J.—The Erie railroad will erect a 2-story market building, 59 x 208 feet to cost $80,000.

NEWARK, N. J.—The Patent Spring Bed Co., 201 Norfolk street, will erect a 3-story plant addition, 157 x 157 feet.

TRENTON, N. J.—The Orr Machine Guarding Co. has let a contract for a 2-story plant, 50 x 75 feet, to cost $30,000. The company manufactures machinery guards.

TRENTON, N. J.—The V. R. H. Corp. has been incorporated to manufacture machine tools with a capital stock of $30,000 by Fred Van Tassel, B. K. Ringkamp and Percy Hobson.

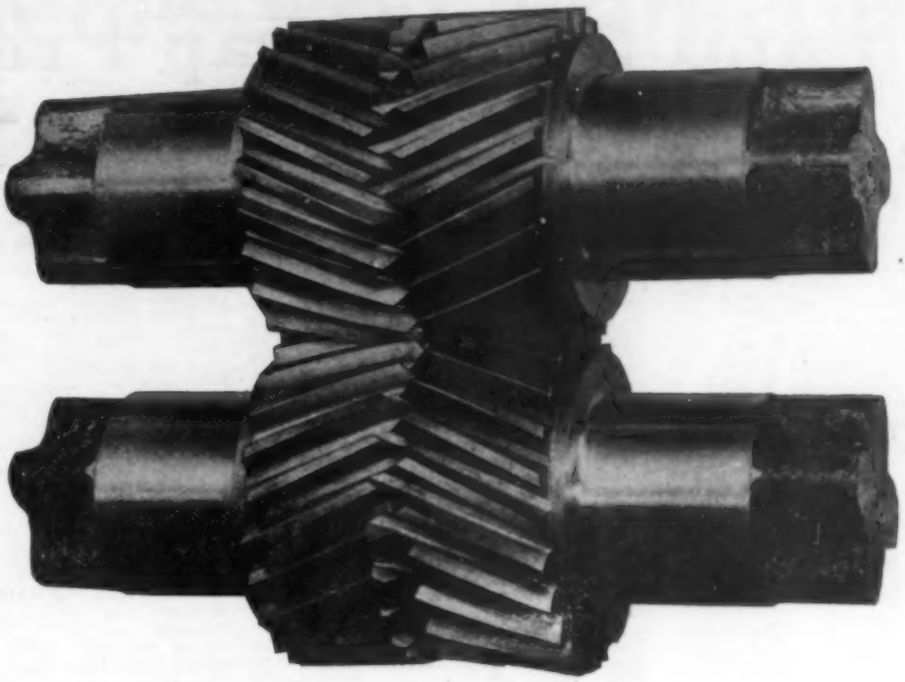
Central States Activity

ASHLAND, WIS.—The Ashland Machine & Paper Co. has been incorporated by Fred M. Cole, A. E. Helmer and R. C. Burger to conduct a general foundry, machine shop and paper mill business. It has a capitalization of $100,000.

BARABOO, WIS.—A plant for the production of wrenches and other tools for machine and automobile shops is being established here by the Allen-Dieffenbaugh Wrench & Tool Co., a new corporation organized by A. C. Allen and Thomas Hollingsworth of Chicago.

COLBY, WIS.—Plans are being prepared for a canning plant to include a boiler house, 20 x 56

(*Continued on page* 340)



MILL PINIONS

MADE FROM

Open Hearth Steel Castings

We own and operate one of the largest steel foundries in the West, making castings from 1 to 100,000 pounds.

THE FALK COMPANY

MILWAUKEE, WIS.

AGENTS: Pittsburgh—W. O. Beyer, 1007 Park Bldg. New York—M. P. Fillingham, 50 Church St. Wilkes-Barre—Vulcan Iron Works. Denver—Denver Engineering Works. San Francisco—F. W. Grimwood, Rialto Bldg.

Say you saw it in THE IRON TRADE REVIEW

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Pittsburgh	$26.00 to 26.50
Chicago	24.50 to 25.00
Eastern Pennsylvania	23.00 to 23.00
Cleveland	24.75 to 25.25
St. Louis	22.50 to 23.00
Buffalo	25.00 to 26.00
New York (dealers)	19.00 to 19.50
Birmingham	19.00 to 25.00
Cincinnati	24.00 to 24.50
Valleys	25.50 to 26.25
Boston (dealers)	19.50 to 20.50
Detroit	21.00 to 21.50

BUNDLED SHEETS

Pittsburgh	$14.50 to 15.50
Eastern Pennsylvania	17.00 to 18.00
Cleveland	14.00 to 14.50
Buffalo	16.50 to 17.50
Cincinnati	16.00 to 17.00
St. Louis	12.00 to 12.50

STEEL RAILS, SHORT

Chicago	$29.50 to 30.00
Boston (dealers)	21.00 to 22.00
Cleveland	21.50 to 22.00
St. Louis	24.00 to 24.50
Birmingham	19.00 to 25.00
Cincinnati	23.00 to 23.50
Detroit	20.00

STOVE PLATE

Pittsburgh	$30.00 to 31.00
Chicago	31.50 to 32.00
Eastern Pennsylvania	26.50 to 27.50
Cleveland	31.00 to 32.00
Detroit	26.00 to 26.50
Birmingham	25.00 to 27.00
Buffalo	31.50 to 32.50
New York	24.00 to 24.50
Birmingham	25.00 to 27.00
St. Louis	30.00 to 30.50
Cincinnati	27.00 to 28.00
Boston (consumers)	28.00 to 29.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$30.50 to 31.50
Eastern Penn. (guaranteed)	31.00 to 32.00
Buffalo	31.50 to 32.50

SHOVELING STEEL

Chicago	$24.50 to 25.00
St. Louis	22.00 to 22.50

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$28.50 to 29.00
Chicago	29.00 to 29.50
St. Louis	25.00 to 25.50

BALED SHEETS

Pittsburgh	$21.00 to 22.00
Chicago	18.00 to 18.50
Detroit	17.50 to 18.00
Buffalo	23.00 to 23.50

FROGS, SWITCHES, GUARDS

Chicago	$24.50 to 25.00
St. Louis	24.00 to 24.50
Eastern Pennsylvania	22.00 to 23.00

BOILER PLATE, CUT

Detroit	$17.50 to 18.50
St. Louis	17.00 to 17.50

ANGLE BARS—STEEL

Chicago	$28.00 to 28.50
St. Louis	23.00 to 23.50

Iron Mill Scrap

RAILROAD WROUGHT

Pittsburgh, No. 1	$29.50 to 30.50
Pittsburgh, No. 2	25.50 to 26.00
Chicago, No. 1	28.50 to 29.00
Chicago, No. 2	27.50 to 28.00
Eastern Pennsylvania No. 1	33.00 to 34.00
Cleveland, No. 1	27.00 to 28.00
St. Louis, No. 1	27.50 to 28.00
St. Louis, No. 2	25.00 to 25.50
Buffalo	30.50 to 31.50
Cincinnati	29.00 to 30.00
Birmingham, No. 1	20.00 to 24.00
New York, No. 1 (dealers)	28.00 to 29.00
Boston (dealers)	27.50 to 28.00

WROUGHT PIPE

Eastern Pennsylvania	$21.50 to 22.50
Buffalo	20.50 to 21.50
New York (dealers)	17.50 to 18.00
Boston (dealers)	18.00 to 20.00

YARD WROUGHT

Eastern Pennsylvania, No. 1	$27.00 to 28.00

CITY WROUGHT

New York, long (dealers)	$23.00 to 23.50

BUSHELING

Chicago, No. 1	$20.75 to 21.25
Chicago, No. 2	14.00 to 14.50
Cleveland, No. 1	18.75 to 19.25
Cleveland, No. 2	16.00 to 16.25
St. Louis, No. 1	22.00 to 22.50
Buffalo, No. 1	19.50 to 20.50
Cincinnati, No. 1	21.00 to 21.50
Eastern Pennsylvania, No. 1	18.00 to 19.00
Detroit No. 2	11.00 to 11.50

MACHINE SHOP TURNINGS

Pittsburgh	$13.00 to 13.50
Chicago	11.00 to 11.50
Eastern Pennsylvania	17.00 to 18.00
Cleveland	12.25 to 12.75
Buffalo	15.00 to 16.00
New York (dealers)	14.50 to 15.00
St. Louis	12.50 to 13.00
Detroit	9.00 to 9.50
Cincinnati	14.00 to 14.50
Birmingham	12.00 to 15.00
Valleys	13.00 to 13.25
Boston (dealers)	13.00 to 14.00

CAST IRON BORINGS

Pittsburgh	$18.00 to 18.50
Chicago	15.00 to 15.50
Eastern Pennsylvania	20.50 to 21.50
Eastern Pennsylvania (chemical)	22.00 to 23.00
Cleveland	17.75 to 18.00
St. Louis	15.50 to 16.00
Detroit	14.50 to 15.00
Buffalo	19.50 to 20.00
New York (dealers' price)	16.50 to 17.00
Cincinnati	15.00 to 16.00
Birmingham	12.00 to 15.00
Valleys	18.00 to 18.25
Boston (dealers)	15.00 to 16.00

MIXED BORINGS AND TURNINGS

(For blast furnace use)

Eastern Pennsylvania	$16.50 to 17.50
Boston (dealers)	13.00 to 14.00
Cleveland	16.00 to 16.50

IRON AXLES

Pittsburgh	$44.00 to 45.00
New York (dealers)	46.00 to 47.00
Chicago	46.00 to 47.00
Eastern Pennsylvania	45.00 to 46.00
Detroit	37.00
Cleveland	42.50 to 43.00
St. Louis	44.00 to 44.50
Buffalo	39.00
Cincinnati	36.00 to 37.00
Birmingham	30.00 to 33.00

IRON RAILS

Chicago	$36.50 to 37.00
Cleveland	29.50 to 30.50
St. Louis	32.00 to 32.50
Buffalo	28.00 to 29.00
Cincinnati	26.00 to 27.00

PIPES AND FLUES

Chicago	$18.00 to 18.50
Cleveland	19.00 to 20.00
Detroit	16.00
St. Louis	19.00 to 19.50
Cincinnati	20.00 to 21.00

GRATE BARS

Chicago	$32.00 to 32.50
Cleveland	30.00 to 31.00
Detroit	22.50 to 23.50
Buffalo	23.50 to 24.50
New York	24.00 to 25.00
Eastern Pennsylvania	29.00 to 30.00

FORGE FLASHINGS

Cleveland, large	16.00 to 16.50
Chicago, small	21.50 to 22.00
Cleveland, small	18.50 to 19.00
Boston (dealers)	14.00 to 15.00
Detroit	14.50 to 15.00

FORGE SCRAP

Chicago	$27.50 to 28.00
Eastern Pennsylvania, No. 1	17.00 to 18.00
Boston	14.00 to 15.00

ARCH BARS AND TRANSOMS

Chicago	$38.00 to 38.50
St. Louis	35.00 to 35.50

ANGLE BARS—IRON

Chicago	$35.75 to 36.25
St. Louis	33.00 to 33.50

Iron and Steel Works Scrap

AXLE TURNINGS

Pittsburgh	$20.50 to 21.50
Eastern Pennsylvania	21.00 to 22.00
Boston (dealers)	15.00 to 16.00
St. Louis	14.50 to 15.00
Detroit	$17.50 to 18.00
Cleveland	18.00 to 18.25
Buffalo	19.50 to 20.50
Chicago	20.00 to 20.50

STEEL CAR AXLES

Pittsburgh	$33.00 to 34.00
Eastern Pennsylvania	40.00
Cleveland	33.00 to 34.00
St. Louis	37.00 to 37.50
Buffalo	39.00
Chicago	37.00 to 37.50
New York (dealers)	41.00 to 42.00
Birmingham	30.00 to 33.00
Boston (dealers)	36.00 to 36.50
Detroit	32.00

SHAFTING

Eastern Pennsylvania	34.00 to 35.00
St. Louis	33.50 to 34.00
New York (dealers)	29.00 to 30.00
Chicago	37.50 to 38.00

Iron Foundry Scrap

CAR WHEELS

Pittsburgh, iron	$39.00 to 40.00
Pittsburgh, steel	28.50 to 29.00
Chicago, iron	36.50 to 37.00
Eastern Pennsylvania, iron	38.00 to 39.00
Cleveland, iron	33.50 to 34.50
St. Louis, iron	35.00 to 35.50
Buffalo, iron	37.00 to 38.00
Birmingham, iron	33.00 to 35.00
Birmingham, tram car	31.00 to 33.00
Boston (consumers)	40.00 to 41.00
Cincinnati	30.00 to 31.00
New York, iron	36.00 to 37.00
Detroit	26.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	$39.00 to 41.00
Chicago, cupola	42.00 to 42.50
Eastern Pennsylvania, cupola	38.00 to 40.00
Cleveland, cupola	40.00 to 41.00
New York cupola (dealers)	36.00 to 37.00
Cincinnati, No. 1, machinery, cupola (net)	34.00 to 35.00
Detroit	33.00 to 34.00
Birmingham, cupola	33.00 to 35.00
St. Louis, railroad	37.50 to 38.00
St. Louis, agricultural	36.50 to 37.00
Buffalo	37.00 to 38.00
Boston (consumers)	42.00 to 43.00
Valleys	38.00 to 39.00

HEAVY CAST

New York (dealers)	$34.00 to 35.00
Buffalo	27.00 to 28.00
Pittsburgh	33.00 to 34.00
Cleveland	28.50 to 29.00
Boston (consumers)	34.00 to 35.00

MALLEABLE

Pittsburgh, railroad	$31.00 to 32.00
Pittsburgh, agricultural	27.50 to 28.50
Chicago, railroad	32.00 to 32.50
Chicago, agricultural	31.00 to 31.50
Eastern Pennsylvania, railroad	
Cleveland railroad	32.50 to 33.00
Cleveland agricultural	
St. Louis, railroad	28.00 to 28.50
St. Louis, agricultural	27.00 to 27.50
Cincinnati, railroad	28.00 to 29.00
Cincinnati, agricultural	29.00 to 29.50
Boston, railroad	27.50 to 28.50
Buffalo	30.50 to 31.50
Detroit	27.00 to 28.00

Miscellaneous Scrap

REROLLING RAILS

5 feet and over

Pittsburgh district	$31.00 to 32.00
Chicago	36.50 to 37.00
Eastern Pennsylvania	31.00 to 33.00
Cleveland	30.00 to 31.00
St. Louis	34.00 to 34.50
Birmingham	28.00 to 30.00
Boston (dealers)	29.00 to 30.00
Detroit	28.00 to 29.00

LOCOMOTIVE TIRES

Chicago	$27.00 to 27.50
St. Louis	23.00 to 23.50

BOILER PUNCHINGS

Chicago	$29.50 to 30.00
Eastern Pennsylvania	27.00 to 28.00

When the Scrap Market Is Dull

While seeking a more favorable market the best form in which to hold your sheet scrap, etc., and the form that always commands the best prices is the dense hydraulically compressed bundle.

Thus less storage space is required—under roof to prevent loss from corrosion; and because of greater car tonnage under minimum car rate, you add from 25% to 50% freight savings to your profits.

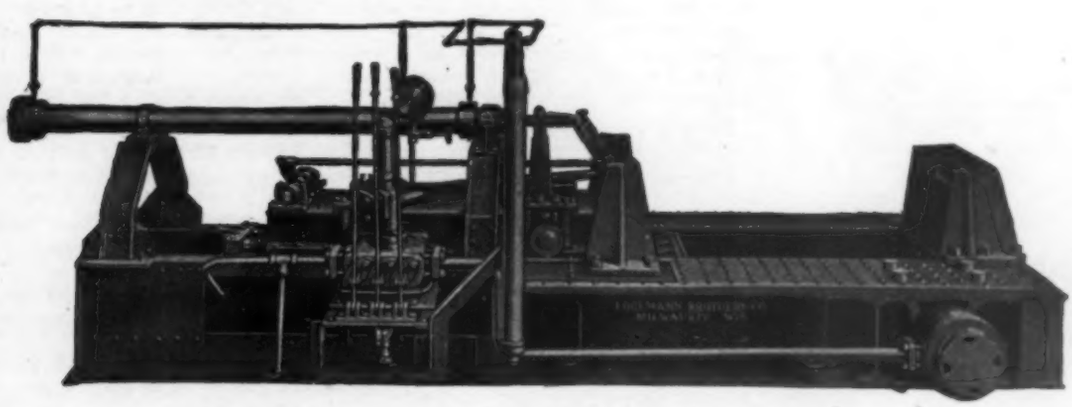
For greatest compression, largest daily output, at lowest operating cost, use

LOGEMANN Double Ram Hydraulic Scrap Metal PRESSES

You can enjoy the advantage of the accumulated experience from hundreds of Logemann scrap bundling presses now in use.

They embody a simplified mechanism that requires no special skill to operate rapidly. Press and pump are so designed that all the motive power applied is utilized, thus reducing power cost.

Powerfully built, all working parts constructed to resist the severest strains—selected material, first class workmanship—all minimize upkeep cost and insure lasting efficiency.



A medium sized press is shown; there are smaller and larger sizes in standard models.

Advise character and daily tonnage of your scrap and let us suggest press best suited to your requirements.

Logemann Brothers Co.
3126 Burleigh Street
Milwaukee, Wis.

Builders of Baling Presses and Hydraulic Machinery

(*Continued from page 336*)

feet. The name of the owner has been withheld. The general contract has been let to Hoeppner Bartlett Co., Eau Claire, Wis.

FOND DU LAC, WIS.—The Bulldog Tractor Co., J. H. Frits, vice president, Oshkosh, is building a 1-story plant, 60 x 60 feet, costing $25,000.

FOND DU LAC, WIS.—The Service Motor Co. Ford dealer, is erecting a 1-story addition, 52 x 60 feet, which will be equipped as a machine and repair shop.

GRAND RAPIDS, WIS.—Articles of incorporation have been filed by the American Rotary Engine Co., a $200,000 concern which will manufacture engines, pumps, compressors and other machinery. D. B. Phillco, I. P. Witter and J. A. Cohen are incorporators.

HARTFORD, WIS.—Bids are being taken for a chain and pocket type coal elevator delivering 20 to 25 tons per hour, to be installed at the city light and power plant. William Radke is city clerk.

MANITOWOC, WIS.—Following the disposition of the entire holdings of the Manitowoc Shipbuilding Co., a new concern styled the Manitowoc Shipbuilding Corp., capitalized at $1,500,000, has been formed, by A. L. Nash, L. W. Ledvina and others.

MENASHA, WIS.—Contracts amounting to $160,000 have been awarded by the Gilbert Paper Co. for construction of a machine room, 65 x 140 feet, and a finishing room, 40 x 180 feet, both 1 story.

MILWAUKEE.—The Milwaukee branch of the Packard Motor Car Co., 3501-3517 Grand avenue, will be enlarged by a 1-sory addition, 80 x 150 feet, which will be used mainly as a machine shop.

MILWAUKEE.—The Badger Bearing Co., 157 Buffalo street, Charles Strassman, secretary, will add to its production facilities and has increased its capital from $10,000 to $20,000.

MILWAUKEE.—The car repair shop of the Chicago, Milwaukee & St. Paul railroad recently was damaged by fire. The loss was estimated at $230,000.

MILWAUKEE.—A loss of about $5000 was caused by fire in the foundry of the Badger Brass Co. at 243 Lake street. The plant of the Mertes-Miller Co., boilers, at 239 Lake street, was damaged. Both shops are now undergoing repairs.

MILWAUKEE.—The Wisconsin Ever Tight Co. has filed articles of incorporation. It is capitalized at $10,000 and will manufacture gas engine and automobile specialties. The incorporators are J. P. McGuigan, J. L. O'Connor and Lysander B. Armstrong.

PORT WASHINGTON, WIS.—Construction work has been started by the Gilson Mfg. Co. on additions to its plant. The machine shop extension will be 80 x 200 feet, and a storage and shipping building, 40 x 200 feet.

RACINE, WIS.—The Hamilton-Beach Mfg. Co. is having plans prepared by E. L. Flegel, architect, for a foundry, 80 x 200 feet.

SHEBOYGAN, WIS.—Sealed bids are being taken until Aug. 2 by the board of education for a new high school which will cost approximately $1,000,000. It will be 2 story and basement, 268 x 334 feet. One wing will contain manual training shops.

STANLEY, WIS.—The business established six months ago by the Stanley Wheelless Trailer Co. has been incorporated under the same name, with a capitalization of $40,000.

VESPER, WIS.—W. W. Clark, Anthony Timberman and associates have organized the Wood County Rural Electric Co., capitalized at $100,000, to build and operate light and power utilities in Wood and Portage counties.

WAUKESHA, WIS.—The Waukesha Casting Co., 340 Broadway, is having plans drawn for a foundry, 120 x 130 feet, costing $50,000.

WAUKESHA, WIS.—The Automobile Products Co., capitalized at $10,000, has been chartered to manufacture accessories and parts by G. W. Tassell, R. P. Breese and George L. Rock.

WAUSAU, WIS.—A new hydroelectric power plant costing about $250,000 will be erected on the Wisconsin river by the Wisconsin Valley Electric Co.

BENTON HARBOR, MICH.—The Saranac-Automatic Machine Corp., capitalized at $400,000, has been chartered to manufacture machinery by Edward Craig, F. L. Bradford and E. C. Knott.

DETROIT.—The Standard Reamer & Tool Co. is building a foundry, 50 x 100 feet.

DETROIT.—The Standard Gear Co., capitalized at $100,000, has been chartered to take over the business of the Langtry Machine Co., Mead Mfg. Co., Michigan Standard Gear Co., W. M. B. Machine Co., by Dell A. Mead and W. R. Mead.

FLINT, MICH.—The Champion Ignition Co., Industrial and Harriet streets, plans a power house to cost $60,000.

GRAND RAPIDS, MICH.—The Imperial Machinery Co., 230 Ionia street, is building a 2-story plant, 50 x 100 feet.

KALAMAZOO, MICH.—The Kalamazoo Spring & Axle Co. plans to remodel its plant.

MARSHALL, MICH.—The Albion Foundry & Machine Co. is a new corporation organized with a capital of $100,000 to take over the foundry of the Union Steel Products Co. It is stated that a new foundry will be erected later.

ST. JOSEPH, MICH.—The Upton Machine Co. is building a 1-story machine shop, 90 x 175 feet, costing $75,000.

CHICAGO.—The American Forge Co., 2503 Blue Island avenue, plans a plant at a cost of $300,000.

CHICAGO.—The Standard Electric Co., 216 South Clinton street, plans a plant, 5 stories, 82 x 150 feet, to cost $200,000.

CHICAGO.—The Union Railroad Equipment Co., 332 South Michigan boulevard, will build a forge shop, 70 x 120 feet.

CHICAGO.—The Standard Electric Co., 216 South Clinton street, L. E. Parker, president, will build a 5-story plant, 82 x 150 feet, costing $200,000.

CHICAGO.—The American Forge Co., 2503 Blue Island avenue, is building a plant of five buildings costing $300,000, including two 40 x 80, one each 65 x 120, 30 x 80 and 20 x 40 feet.

CHICAGO.—Architect J. J. Novy, 2434 South Ridgeway avenue, is preparing plans for a machine shop, 1 story, 36 x 125 feet, to cost $16,000. The name of the owner has been withheld.

DUPO, ILL.—The Bauxite Products Co. plans a factory building, at a cost of $75,000.

MOLINE, ILL.—The Wright Carriage Body Co., Twenty-first street and Third avenue, has awarded a contract for an addition to its plant, 4 stories, 110 x 210 feet, to cost $100,000.

OTTAWA, ILL.—The J. E. Porter Co. has reorganized under the name of the J. E. Porter Corp., capitalized at $400,000 to manufacture barn equipment. A. S. Hook is president.

ANDERSON, IND.—A permit has been issued to the American Steel & Wire Co. to erect an addition at a cost of $18,500.

ANDERSON, IND.—The Lavelle Foundry Co. has increased its capital from $25,000 to $500,000, in order that production may be increased by construction of a branch foundry at Indianapolis.

COLUMBUS, IND.—Improvements, including enlargement of the foundry and the installation of new cranes and power equipment, have been completed at the plant of the Caldwell & Drake Iron Works.

EAST CHICAGO, IND.—The Carroll Castings Co., capitalized at $250,000 has been chartered by Leo F. Carroll, M. W. Coursey and H. E. Carroll.

FT. WAYNE, IND.—International Harvester Co. of America, 606 South Michigan boulevard, Chicago, will proceed at once to erect a motor truck plant, consisting of several 1-story monitor-type buildings and a 3-story L-shaped building.

INDIANAPOLIS.—The Precision Machine Co. recently was incorporated with a capital of $150,000 to manufacture screw machine products, by W. B. Worl, William W. Woolen Jr. and Clay W. Sparks.

KENDALLVILLE, IND.—The Wert Mfg. Co. has started work on a plant addition.

MUNCIE, IND.—The plant of the Highland Mfg. Co., manufacturer of electric and gas fixtures, recently was damaged by fire.

VALPARAISO, IND.—The McGill Metal Co. will build a plant for the production of bronze die castings, costing $100,000.

CANTON, O.—The Canton Drop Forge Co. has a permit to erect an addition.

CANTON, O.—The Miller Pasteurizing Machine Co. plans a plant, 1 story, 100 x 1000 feet to cost $100,000.

CANTON, O.—Erection of an addition to the tube mill of the Timken Roller Bearing Co. is contemplated. A building permit has been obtained for a structure, 120 x 200 feet.

CINCINNATI.—The Hill & Griffith Co. contemplates a machine shop and warehouse.

CINCINNATI.—The Lunkenheimer Co. has applied for a permit to erect a foundry building at a cost of $400,000.

CINCINNATI.—The Peerless Die & Tool Co. has been incorporated with a capital stock of $35,000, by H. Backerm, A. W. Kops, W. A. Freitag, H. Ziegler, J. Keim and B. H. Bohlinger.

CLEVELAND.—The Republic Tool & Mfg. Co. has purchased a site on which it plans a plant to have an ultimate floor space of 150,000 square feet.

CLEVELAND.—The Nickel Plate Foundry Co. plans an addition to its foundry, 30 x 70 feet, to cost $5000.

CLEVELAND.—The Motor Repair & Mfg. Co., 216 High street, plans a plant, 1 story, 60 x 80 feet, to cost about $17,000.

CLEVELAND.—The Monarch Steel & Metal Co. has been incorporated with a capital of $50,000, by L. D. Moss, H. E. Morton, J. Dembe, T. F. Sipe and H. M. Kohler.

CLEVELAND.—The Hammond Metal Products Co. has been incorporated with a capital of $15,000, by H. R. Hammond, R. E. Westervelt, H. D. Leach, D. J. Needham and G. C. Brainard.

CLEVELAND.—The Monarch Steel & Metal Co. recently was incorporated with a capital stock of $50,000, by L. D. Moss, H. F. Morton, J. Dembe and others.

COSHOCTON, O.—The Northern Ohio Traction & Light Co. plans a power house.

ELYRIA, O.—The Elyria Enameled Products Co. plans a sandblast building, 2 stories, 40 x 60 feet.

HAMILTON, O.—The Decatur Casting Co. has been incorporated by G. S. Rentschler, D. McDaniel and others.

KENT, O.—It is expected the plant of the Thomart Motor Co. will be ready for operation about Aug. 1.

KENTON, O.—The Champion Engineering Co. plans an extension to its plant, 1 story, 60 x 190 feet, to cost $50,000.

LORAIN, O.—The Lorain Auto Body Co. recently was granted a charter with a capital of $55,000. The incorporators are S. J. Wirtz, A. E. Cameron and T. C. Metzger.

MARIETTA, O.—The American Iron & Metal Co. recently was chartered with a capital stock of $50,000, by R. Salmowitz, M. Sussman, L. Glodish, S. S. Miller and others.

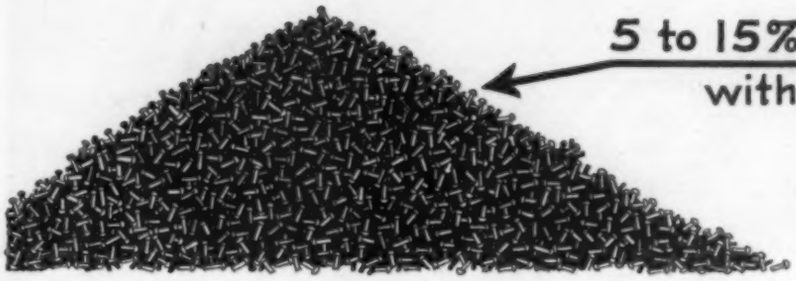
NORWOOD, O.—The Cincinnati Tool Co. plans a machine shop, 1 story, 13 x 101 feet.

WARREN, O.—The Eastern Ohio Steel Co. has been organized with a capital stock of $5000, by F. Baldwin, S. Petty, R. Whitney, H. Shoenberger and A. O. Lea.

ZANESVILLE, O.—The Standard Malleable Com-

(*Continued on page 344*)

How many spoiled rivets go into *your* scrap heap?



5 to 15% Average Spoiled Rivets with fuel-burning heaters

Less than ½ of 1% Spoilage with Berwick Electric Heater

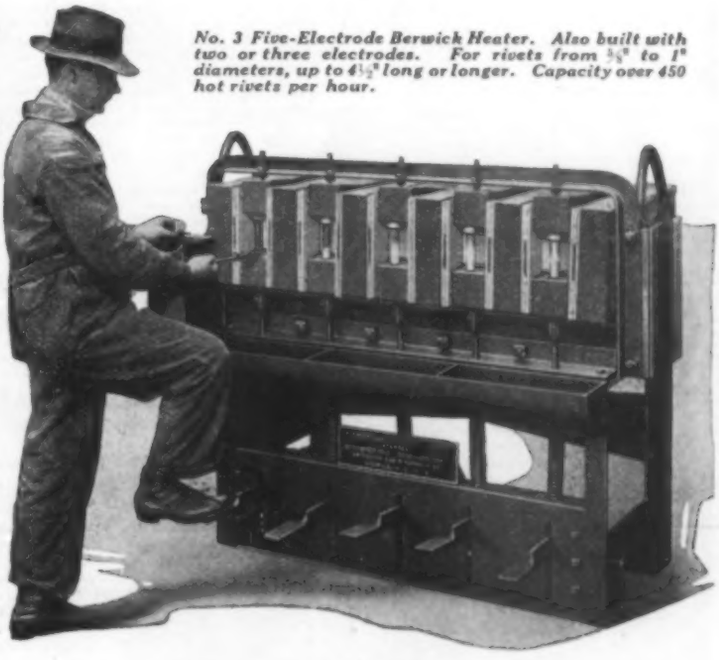
A leading trade paper, after investigating throughout the country, places loss of rivets in average plants at approximately 15 per cent. Most of the loss is due to burning and scaling (or oxidation) in fuel-burning heaters.

The Berwick Electric Heater reduces this loss to less than ½ of 1 per cent. Every rivet is in plain view while being heated, and inspection is not hampered by flames, smoke, or intense heat. Only gross carelessness can permit any loss whatever from overheating.

The average loss with fuel-burning heaters, figuring rivets at $4 delivered, is at least 40 cents per hundred pounds. Practical elimination of this waste is only one of the savings effected by—

BERWICK ELECTRIC RIVET-HEATER

No. 3 Five-Electrode Berwick Heater. Also built with two or three electrodes. For rivets from ⅜" to 1" diameters, up to 4½" long or longer. Capacity over 450 hot rivets per hour.



Note these features:

—Low operating cost. Less than 20 kilowatt-hours per hundred pounds of rivets heated.

—No smoke, gas, dirt, or excessive heat.

—Fire risk eliminated.

—Hot rivets in 20 to 30 seconds after starting.

—Time-saving portability. Heater can be placed close to work. Often eliminates sticker-boy.

—Power used only when hot rivets are needed.

—Uniform heating. Radiation from center of rivet outward.

—Safe. Simple to operate. No complicated wearing parts. Negligible maintenance cost.

Send for catalogue. Mention sizes of rivets used, capacity required, and alternating current conditions.

American Car and Foundry Company

165 Broadway, NEW YORK

Iron and Steel Prices

Iron Ore

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 per cent iron	$7.45
Mesabi Bessemer, 55 per cent iron	7.20
Old range nonbessemer, 51½ per cent iron	6.70
Mesabi nonbessemer, 51½ per cent iron	6.55

Port Henry Iron Ore, f.o.b. Port Henry

Old bed 21 furnace	$5.80
Old bed concentrates, 63 per cent	6.70
Harmony, cobbed, 63 per cent	6.70
New bed, low phos., 65 per cent	9.50
Lump ore for fix	7.00

Manganese Ore

Brazilian, 48 to 50 per cent, c.i.f. Atlantic ports, 75 to 80 cents per unit.

Indian 48 to 50 per cent, c.i.f. Atlantic ports, 75 to 80 cents per unit.

Caucasian, 48 to 50 per cent, f.o.b. cars, Atlantic ports, 75 to 80 cents per unit.

GRAVEL FLUOR SPAR

85 per cent f.o.b. Kentucky and Illinois, per ton ..... $22.00 to 25.00

Warehouse Prices

Steel bars, Boston	5.50c
Steel bars, Chicago	3.37c to 3.87c
Steel bars, Cleveland	3.27c to 6.00c
Steel bars, Detroit	4.485c
Steel bars, Philadelphia	5.00c
Steel bars, Phila., ½ inch and smaller	6.00c to 10.00c
Steel bars, New York	3.37c to 5.25c
Steel bars, St. Louis	3.94c to 4.50c
Steel bars, Cincinnati	5.00c
Steel bars, St. Paul	3.59c to 4.095c
Steel bars, Buffalo	4.56c
Iron bars, Boston	5.50c
Iron bars, Buffalo	5.26c
Iron bars, Chicago	3.87c to 4.50c
Iron bars, Detroit	4.485c
Iron bars, St. Louis	4.50c
Iron bars, Cincinnati	4.50c
Iron bars, Philadelphia	5.00c
Iron bars, New York	4.50c to 5.25c
Shapes, Chicago	3.47c to 3.97c
Shapes, Detroit	4.335c
Shapes, Boston	5.50c
Shapes, St. Louis	4.04c
Shapes, St. Paul	3.695c to 4.195c
Shapes, New York	3.47c to 5.00c
Shapes, Cleveland	3.37c to 4.50c
Shapes, Philadelphia	4.75c
Shapes, Phila., smaller than 3 inch	5.00c
Shapes, Buffalo	4.41c
Shapes, Cincinnati	4.50c
Plates, Buffalo	4.61c
Plates, Chicago	3.67c to 4.17c
Plates, Detroit	4.535c
Plates, Boston	6.00c
Plates, St. Louis	4.24c
Plates, St. Paul	3.895c to 4.395c
Plates, New York	3.67c to 5.00c
Plates, Cleveland	3.75 to 4.50c
Plates, Phila., ¼-inch and heavier	5.50c
Plates, Phila., ⅛-inch	6.00c
Plates, Cincinnati	6.00c
No. 10 blue anl. sheets, N. Y.	7.12c to 9.00c
No. 10 blue anl. sheets, Phila.	8.00c
No. 10 blue anl. sheets, Chicago	4.57c to 7.02c
No. 10 blue anl. sheets, Cleveland	6.75c to 8.10c
No. 10 blue anl. sheets, Boston	8.00c
No. 10 blue anl. sheets, Buffalo	6.90c
No. 10 blue anl. sheets, Detroit	7.50c
No. 10 blue anl. sheets, St. L.	7.09c
No. 10 blue anl. sheets, Cincinnati	7.10c
No. 10 blue anl. sheets, St. Paul	4.79c to 7.225c
No. 10 blue anl. sheets, Boston	8.00c
No. 28 black sheets, Chicago	5.62c to 8.00c
No. 28 black sheets, New York	8.50c to 10.00c
No. 28 black sheets, Phila.	8.50c
No. 28 black sheets, Cleveland	6.75c to 8.90c
No. 28 black sheets, Boston	9.15c
No. 28 black sheets, Cincinnati	9.00c
No. 28 black sheets, Detroit	8.50c
No. 28 black sheets, St. Louis	8.10c
No. 28 black sheets, St. Paul	5.845c to 8.225c
No. 28 black sheets, Buffalo	8.25c
No. 28 galv. sheets, Chicago	9.50c
No. 28 galv. sheets, New York	9.75c to 11.00c
No. 28 galv. sheets, Phila.	10.50c
No. 28 galv. sheets, Boston	10.50c
No. 28 galv. sheets, Cleveland	9.00c to 10.00c
No. 28 galv. sheets, Cincinnati	8.50c to 9.00c
No. 28 galv. sheets, Detroit	10.00c
No. 28 galv. sheets, Buffalo	9 50c
No. 28 galv. sheets, St. Louis	10.35c
Bands, New York	6.32c to 7.00c
Bands, Boston	7.25c
Bands, Detroit	5.685c
Bands, Buffalo	5.76c
Hoops, Buffalo	6.51c
Hoops, Boston	8.25c
Hoops, New York	6.57c to 7.50c
Hoops, Detroit	5.935c
Cold rolled shafting, Buffalo	6.00c
Cold rolled shafting, New York	6.25c to 8.00c
Cold rolled shafting, Boston	8.00c
Cold rolled flats, squares and hexagons, New York	6.75c to 8.50c
Cold rolled rounds	6.25c to 8.00c

Mill Sheet Schedule

Black

Differentials for gage, per 100 pounds

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches wide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 26 in addition to the foregoing, 36 wide by 96 inches and 120 inches long. Extras for width and length to be added.

Freight Rates

PIG IRON

Mahoning and Shenango valleys to:

Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis St. Paul	5.70

Buffalo to:

Albany, N. Y.	$1.80
New England (rail)	3.90
New York and Brooklyn (rail)	3.90

Virginia furnaces to:

Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40

Birmingham, Ala., to:

Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.30

Chicago to:

Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90

Ironton and Jackson, O., to:

Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis St. Paul	5.70

FINISHED MATERIAL

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	25.0 cents
Boston	30.0 cents
Buffalo	21.0 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

GALVANIZED AND LONG TERNE

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	+15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inc., 24, 26, 28, 30 and 36 in. wide by 72, 84, 96 and 120 in. long. Extras for width and length to be added.

BLUE ANNEALED

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Pittsburgh basing discounts to jobbers in carloads.

Steel Pipe

STANDARD WEIGHT

Butt Weld

	Black	Galvanized
⅛, ¼ and ⅜-inch	47 to 50½	20½ to 24
½-inch	51 to 54½	36½ to 40
¾ to 3-inch	54 to 57½	40½ to 44

Lap Weld

2-inch	47 to 50½	34½ to 38
2½ to 6-inch	50 to 53½	37½ to 41
7 to 12-inch	47 to 50½	33½ to 37
13 to 14-inch	37½ to 41	.....
15-inch	35 to 38½	.....

PLUGGED AND REAMED

Butt Weld

1 to 3-inch	52 to 55½	38½ to 42

Lap Weld

2-inch	45 to 48½	32½ to 36
2½ to 6-inch	48 to 51½	35½ to 39

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼ and ⅜-inch	43 to 46½	25½ to 29
½-inch	48 to 51½	35½ to 39
¾ to 1½-inch	52 to 55½	39½ to 43
2 to 3-inch	53 to 56½	40½ to 44

Lap Weld

2-inch	45 to 48½	33½ to 37
2½ to 4-inch	48 to 51½	36½ to 40
4½ to 6-inch	47 to 50½	35½ to 39
7 to 8-inch	43 to 46½	29½ to 33
9 to 12-inch	38 to 41½	24½ to 28

DOUBLE EXTRA STRONG PLAIN

Butt Weld

½-inch	39 to 42½	28½ to 32
¾ to 1½-inch	42 to 45½	31½ to 35
2 to 2½-inch	44 to 47½	33½ to 37

Lap Weld

2-inch	37 to 40½	27½ to 31
2½ to 4-inch	39 to 42½	29½ to 33
4½ to 6-inch	38 to 41½	28½ to 32
7 to 8-inch	33 to 36½	19½ to 23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld

¼-inch	+	+ 35
⅜-inch	15½ to 25½	+ 1½ to 11½
½-inch	19½ to 29½	1½ to 11½
¾ to 1½-inch	24½ to 34½	8 to 18½

Lap Weld

2-inch	20½ to 28½	6½ to 14½
2½ to 6-inch	22½ to 30½	9½ to 17½
7 to 12-inch	19½ to 27½	6½ to 14½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld

	Black	Galvanized
¼-inch	+ 9	+ 35
⅜-inch	13½ to 23½	6½ to +3½
½-inch	18½ to 28½	5½ to 15½
¾ to 1½-inch	24½ to 34½	9½ to 19½

Lap Weld

2-inch	21½ to 29½	8½ to 16½
2½ to 4-inch	23½ to 31½	11½ to 19½
4½ to 6-inch	22½ to 30½	10½ to 18½
7 and 8-inch	14½ to 22½	2½ to 10½
9 and 12-inch	9½ to 17½	5½ to +2½

DOUBLE EXTRA STRONG, PLAIN ENDS

Butt Weld

	Black	Galv.
½-inch	15½ to +39½	3½ to +51½
¾-inch	20½ to +22½	8½ to +34½
1-inch	+38½	+50½
1¼-inch	+22½	+34½
1½-inch	+21½	+33½

Lap Weld

2-inch	16½ to + 7½	4½ to +10½
2½ to 4-inch	18½ to + 2½	9½ to +11½

LINK-BELT

Progressive Assembly at the Willys-Overland Plant

C. W. McKinley, *Production Engineer of the Willys-Overland Company, Toledo, says:*

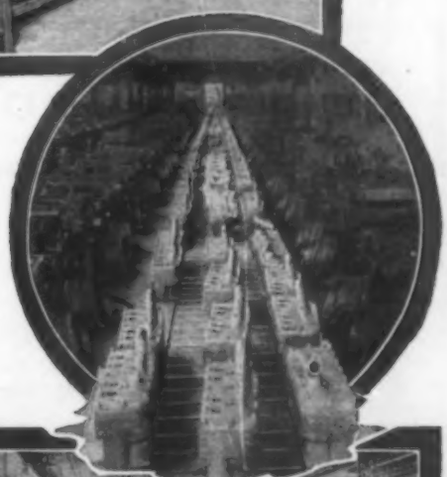
"FIVE years ago in order to increase production so as to satisfy the demand for our cars, we installed the progressive assembly plan in our factory—and now all our cars are completely assembled by this method.

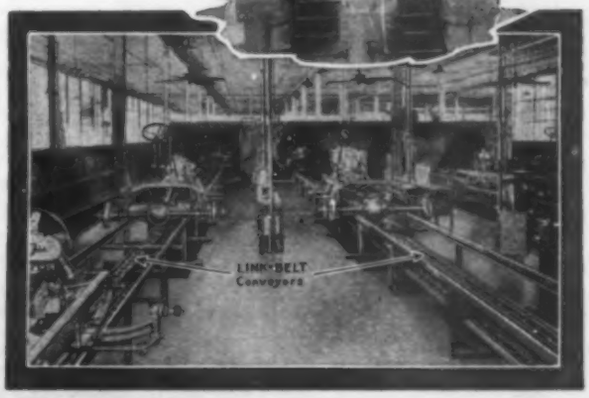
"We use four 900-ft. Link-Belt Conveyors in assembling—the conveyors carry the cars slowly down the line, and men, stationed on both sides, assemble the various parts on the car—and at the end of the conveyors the car is completed.

"With our Link-Belt Conveyors, 600 men, in an 80x 1,000-ft. building, completely assemble 800 cars every 8 hours—and there is absolutely no delay. The conveyors keep the stream of production steady and right up to schedule.

"300 additional men and 80,000 more square feet of factory floor space would be required to turn out this number of cars without our present assembly plan. These two facts alone clearly show the tremendous savings made possible by our installation of Link-Belt Conveyors.

"Another valuable feature is that our employees like the conveyor method—there is less handling of heavy materials—the work is easier—and the men produce more".





No matter what the nature of the material to be handled, nor the amount of power to be transmitted, our engineers can show you how to do it with greater economy than you ever thought possible. Write us

LINK-BELT COMPANY 674A

PHILADELPHIA CHICAGO INDIANAPOLIS

New York . . . . . 299 Broadway
Boston 9 . . . . . 49 Federal St.
Pittsburgh . . . . . 1801 Park Bldg.
St. Louis . . . . . Central National Bank Bldg.
Buffalo . . . . . 547 Ellicott Square
Wilkes-Barre . . . . . 34 National Bank Bldg.
Huntington, W. Va. . . . . Robson-Prichard Bldg.
Cleveland . . . . . 429 Rockefeller Bldg.
Detroit . . . . . 730 Woodward Ave.
Birmingham, Ala. . . . . .
Kansas City, Mo. . . . . 906 Elmhurst Bldg.
Seattle . . . . . 576 First Ave., S.
Portland, Ore. . . . . First and Stark Sts.
San Francisco . . . . . 562 Market St.
Los Angeles . . . . . 163 N. Los Angeles St.
Toronto, Can. . . . . Canadian Link-Belt Co., Ltd.
Denver . . . . . Lindroth, Shubart & Co., Boston Bldg.
Louisville, Ky. . . . . Frederick Wehle, Starks Bldg.
New Orleans . . . . . C. O. Hinz, Hibernia Bank Bldg.
S. L. Morrow, 710 Brown-Marx Bldg.

(*Continued from page 340*)

pany has been incorporated with a capital stock of $100,000, by A. T. Baker, E. A. Palmer, G. C. Blackmore, W. M. Bateman and E. A. Evans.

CLARKSBURG, W. VA.—The Joiner-Jacobs Iron Works has been incorporated with a capital of $25,000, by A. W. Joiner, John W. Jacobs, Frank C. Selken, H. C. Cooper and Charles W. Louchery.

WHEELING, W. VA.—The Wheeling Axle Co. has applied for articles of incorporation and the company will take over the plant of the Spears Axle Co. Incorporators of the new company are George R. Hungerman, R. E. Ritz, Charles Ritz, J. S. Jones and Louis Ritter.

In the South

WHITE PLAINS, KY.—The White Plains Light & Power Co. has been chartered with a capital stock of $2500, by O. C. Littlepage, F. G. Franklin and W. N. Bailey.

UNION, S. C.—The Union Iron Works has been incorporated and plans to establish a foundry.

ATLANTA, GA.—The Red Diamond Motor Inc. has been organized with a capital of $5,000,000. The company plans to start manufacturing automobiles before the end of the year, and has engaged the H. D. Best Engineering Co., New York City, to erect a plant. W. H. Seabrooke is president, and Henry Short, secretary.

ATLANTA, GA.—The W. E. Austin Machine Co. has purchased property at 4 to 6 Spring street and will construct immediately a reinforced concrete building, 80 x 100 feet. The building will be used as general offices, sales display rooms and for manufacturing purposes. The company deals in concrete machinery.

COLUMBUS, GA.—The Central of Georgia railway has let the contract for construction of new shops and a roundhouse here, to cost $500,000.

ANNISTON, ALA.—The Emory Foundry Co. has started operations in its new plant.

FLORENCE, ALA.—Fire damaged the Jackson Island concrete mixing plant at Wilson dam and damaged the warehouse. The loss is reported at $200,000.

FT. PAYNE, ALA.—The Fort Payne Stove & Foundry Co. recently was damaged by fire, loss to the properties being estimated at between $5000 and $10,000.

GADSDEN, ALA.—The Alabama Power Co. plans to rebuild the electric lighting system here, including the electric light plant. The company is now rebuilding the plant at Attalla, Ala.

GADSDEN, ALA.—A. E. Stringer, of Chicago, was in Gadsden recently arranging for storage space for equipment to be shipped here for a large plumbing specialties foundry which is shortly to be established in Gadsden.

MOBILE, ALA.—The Murnan Shipbuilding Co. has been awarded contracts representing approximately $500,000 for the construction of one steam towboat and 12 barges for use in transporting oil from the Mexican oil fields to Tampico. The contracts were placed by the Mexican Oil Co. and others.

TALLADEGA, ALA.—The new plant of the Talladega Foundry Co. has been placed in operation.

Throughout the West

MINNEAPOLIS.—The Hennepin Atomized Fuel Co., 500 Security building, plans a fuel crushing plant, to cost $145,000.

MINNEAPOLIS.—The Modern Foundry & Machinery Co. will build a foundry, 78 x 140 feet, and a machine shop, 50 x 80 feet.

STILLWATER, MINN.—The drop forge plant of the Twin City Forge & Foundry Co. recently was damaged by fire.

DES MOINES, IOWA.—The Pittsburgh-Des Moines Steel Co. is erecting an addition at a cost of $150,000.

MUSCATINE, IOWA.—The Barry Mfg. Co. is erecting an addition at a cost of $20,000.

NEWTON, IOWA.—The Newton Foundry Co. is building a foundry.

ST. LOUIS.—The city and the Wabash railroad are having plans prepared for a viaduct at Delmer avenue, costing $562,000.

ST. LOUIS.—The city and the St. Louis Terminal railroad are having plans prepared for bridges over railroad tracks costing $575,000. L. A. Bowen, city hall, is engineer.

CORSICANA, TEX.—The Oil City Iron Works has been incorporated with a capital of $60,000, by William Clarkson Sr., William Clarkson Jr., and S. E. Kerr.

EL PASO, TEX.—The Hills-Sutton Co. contemplates a sheet metal plant to cost $10,000.

JACKSONVILLE, TEX.—The Hall Foundry & Machine Co. has been incorporated with a capital stock of $60,000, by S. J. Hall, F. L. Haberle and I. C. Beard.

OMAHA, NEB.—The city and four railroads are having plans prepared for a viaduct, 4200 feet long and 40 feet wide, to span railroad tracks, at a cost of $1,500,000. J. C. Bruce is city engineer.

PORT ANGELES, WASH.—The J. H. Gas Turbine Co. has been chartered with a capital stock of $500,000.

SEATTLE.—The Crown Automatic Gear Shift Co. recently was organized with a capital stock of $250,000.

YAKIMA, WASH.—W. L. Lanning, architect, is completing plans for the Puritan Rubber Co. plant to be erected here at a cost of $150,000. The construction will be of steel, brick and concrete.

EUGENE, OREG.—A railroad will be built in the Grande Ronde valley to develop a large timber tract, according to Thomas Russell, one of the incorporators of a company called the Wilhemina & Grande Ronde railroad. Articles of incorporation have been filed.

GOLD HILL, OREG.—The Medford-Jacksonville railroad has been sold to fruit growers of Los Angeles who contemplate extensions to other timber sections and divert the entire output of the mills and factories to their own use.

OREGON CITY, OREG.—W. A. White, architect, has prepared plans for a 2-story, reinforced concrete and brick theater building, 66 x 105 feet, for W. A. Long.

PORTLAND, OREG.—The Arsneau Automatic Tumbler Lock Co., which was recently incorporated with a capital stock of $300,000, plans to establish a plant for the manufacture of locks.

PORTLAND, OREG.—C. G. Preis, New York, engineer for the American Can Co., has filed with the building inspector's office for checking, plans for a new factory building of reinforced concrete, 118 x 407 feet, two stories high in part, to cost $1,000,000.

VALE, OREG.—J. Edwin Johnson of this place has applied to the state engineer for a permit to appropriate water from Malheur river for development of power for pumping, irrigation, municipal lighting and mechanical purposes. A dam is to be constructed and other work done, the total cost to be $300,000.

ALHAMBRA, CAL.—The Alhambra Sheet Metal Works, has been organized to manufacture sheet metal products by Charles Wolf, 915 S. 2nd street, and others.

BRAWLEY, CAL.—The city is having plans prepared for a municipal electric light plant costing $200,000.

LOS ANGELES.—The Moyle Machinery & Products Co. recently was incorporated with a capital stock of $2,500,000.

Business in Canada

ST. STEPHEN, N. B.—The plant of the Mann Axe & Tool Co., Ltd., was damaged by fire recently with $200,000 loss.

DANVILLE, QUE.—The town will build an electric light plant here to cost $40,000.

MONTREAL, QUE.—Adcock & Brewer, Ltd., have been incorporated to manufacture machinery, etc., with $25,000 capital, by Louis P. Crepeau, Maurice Dugas, S. H. R. Bunn and others.

MONTREAL, QUE.—The Joliette Castings & Forgings, Ltd., has been incorporated to manufacture iron, etc., with $1,000,000 capital, by Alexander H. Duff, Walter A. Merrill, Archibald Stalker and others.

MONTREAL, QUE.—The Belanger Foundry Co. has been incorporated to manufacture castings, etc., with $100,000 capital, by Auguste Kean, Elric Genest, Ovide D'Amour and others. The new company will take over the plant and business now carried on by O. Belanger.

ACTON, ONT.—The town will build a pump house and waterworks reservoir, for which bids for construction work are being received. H. N. Farmer is city clerk.

BRANTFORD, ONT.—A contract has been awarded by the Cockshutt Plow Co. for an addition to its forge shop.

CHATHAM, ONT.—Work will be started shortly on construction of waterworks plant and system for city to cost $371,000.

CHATHAM, ONT.—The town will build an addition to waterworks plant to cost $50,000.